THE IRON TRADE REVIEW

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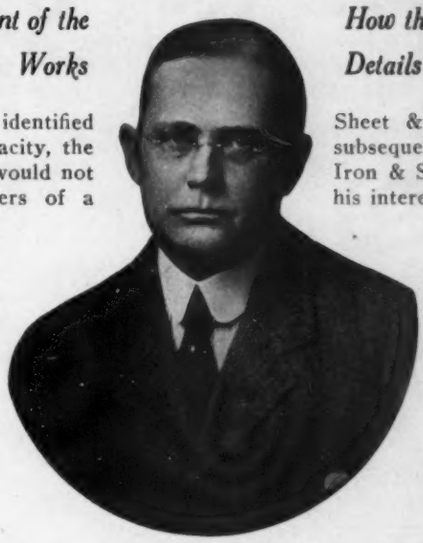
Plant for Manufacturing Sheets and Tin Plate

Layout and Arrangement of the Trumbull Steel Co.'s Works

How the Product is made, with Details of Mill Equipment



JONATHAN WARNER

WITHOUT a Jonathan Warner identified with it in some prominent capacity, the American iron and steel trade would not be complete. For nearly three-quarters of a century a Jonathan Warner has operated blast furnaces, sheet mills and tin plate works and in the history of the Mahoning valley this good old name has been closely linked with the remarkable growth and development of that wonderful district. The sheet and tin plate industry of the United States does not date back many years, but almost from its inception, a Jonathan Warner—the present Jonathan Warner, by the way—has taken an active part in steering its course. It was in the 90's, in 1891, to be exact, that the present Jonathan Warner decided to continue the fame of his forefathers of the same name, and chose the position of superintendent of the Russia Sheet Mills, at Niles, O., as a stepping stone to future greatness in the sheet and tin plate trade of the country. Nine years later he appeared as proprietor of the Struthers, Ohio, Sheet Mills, and when the consolidation of sheet mills was effected, he naturally was appointed manager of sheet mills for the American Sheet Steel Co. and its successor, the American Sheet & Tin Plate Co. In 1906 he resigned, subsequently purchasing the plant of the Empire Iron & Steel Co. at Niles and after disposing of his interest in these works he retired from active business—but only temporarily. His next undertaking was the organization of the Trumbull Steel Co., at Warren, O., and the success of his efforts and those of his associates, is reflected by the magnificent sheet and tin plate works erected on a 70-acre site on the banks of the Mahoning river in the outskirts of that city.

The plant, which was placed in operation only recently, bears the distinction of being equipped to manufacture both sheet and tin plate, with a diversified line of formed products to meet the requirements of the building and other trades. Both flat and corrugated black and galvanized sheets are made including curved corrugated sheets, formed roofing products; pressed brick, rock face and stone siding and metal ceiling. In addition to bright coke and charcoal tins, terne or roofing tins, charcoal iron ternes, long terne sheets, fire door plate, etc., are manufactured. The roofing equipment consists of six sheet mills, six mills for rolling black plate for tinning and 13 stands of cold rolls, with a combined produc-

FIG. 1—VIEW OF ONE SECTION OF THE TRUMBULL STEEL CO.'S ROLLING MILL, SHOWING THE SHEET MILLS

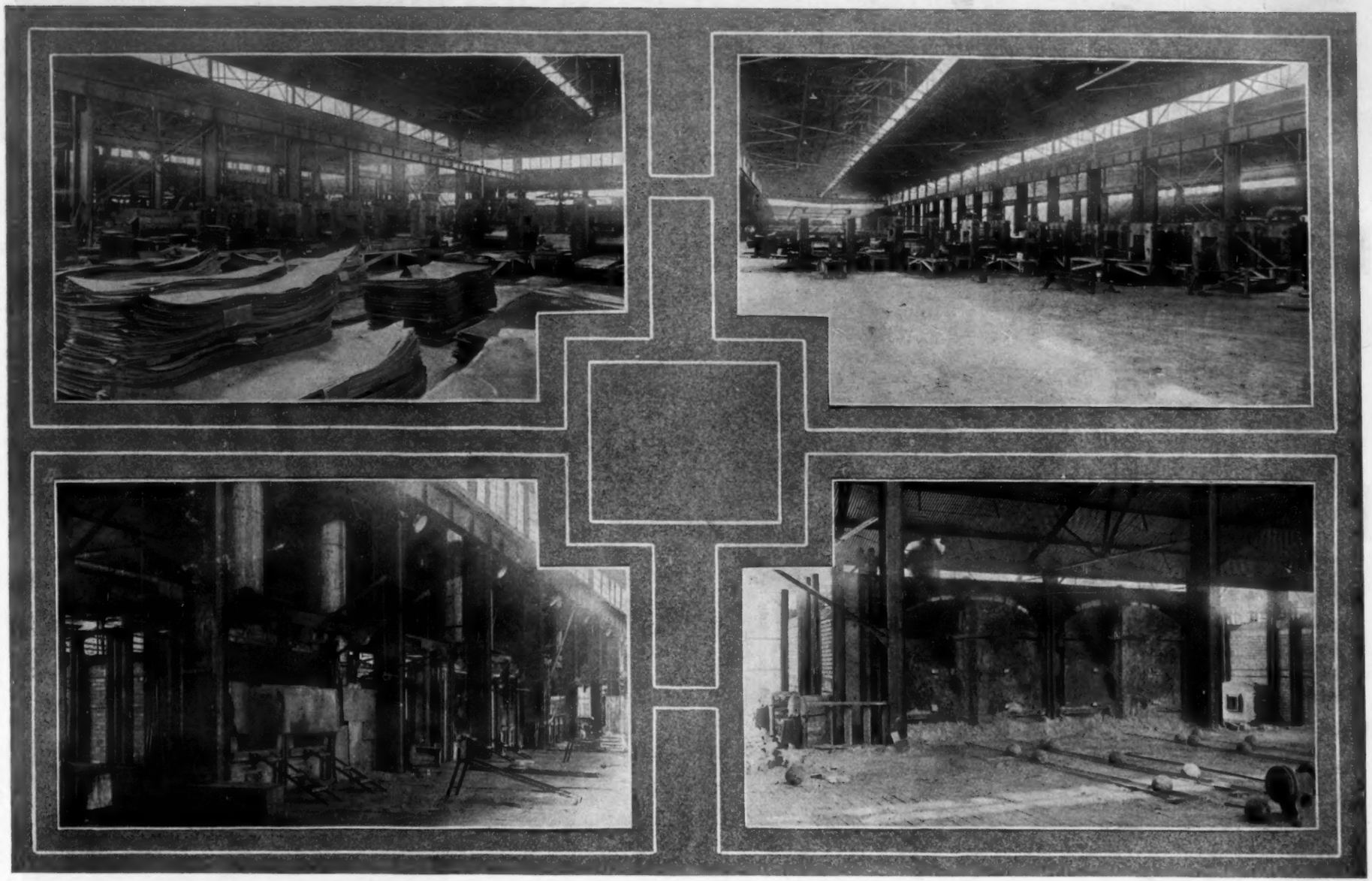


FIG. 2—ENTRY SIDE OF THE COLD MILLS

FIG. 3—DELIVERY SIDE OF THE COLD MILLS, SHOWING ALSO THE TANDEM STANDS

FIG. 4—A VIEW OF SOME OF THE SHEET MILL HEATING FURNACES

FIG. 5—ONE OF THE ANNEALING FURNACES

ing capacity of 60,000 tons a year. The various departments of the plant are well-arranged, the general layout necessitating the minimum handling of material and the receipt and shipment of material is greatly facilitated by the advantageous location of side tracks connecting with both the Pennsylvania and Erie railroads.

Layout of the Plant

The main building, which contains the hot and cold rolling, annealing and pickling departments, is a steel structure, 246 x 800 feet. Paralleling this building and extending more than half its length, is the tin house, 43 x 440 feet, of brick and steel construction. The sheet finishing department and the galvanizing plant is on a line parallel with the rolling mill building and the tin house and is a brick and steel structure, 150 x 600 feet. The tin house, however, is interposed between the rolling mill and the sheet finishing department. Raw material, in the form of sheet and tin bars, is delivered to the bar bank at one end of the rolling mill building, which has a capacity for the storage of 10,000 tons of steel. After being cut to size for rolling, the bars are delivered to the hot mills, which extend in a line through the south bay of the rolling mill building. All of the hot mills are driven by one engine, with the sheet and tin mills on either side. The rolled product, in the form of either sheets or black plate, passes through the various subsequent finishing operations, in a line at right angles to the mill. The sheets are delivered to the middle bay of the main building, where they can be cold rolled if necessary and are annealed in ovens located in the north bay. If subsequent finishing operations are required, the sheets are delivered to the galvanizing plant over a depressed track entering one side of the rolling mill building and which extends the entire width of the galvanizing department. The material is delivered by an electrically-operated car and this arrangement has reduced handling to a minimum. From the galvanizing pots the sheets pass to the cooling wheels in the finishing department and here they either are bundled, or are subjected to the necessary forming operations demanded by the trade. At one end of the finishing department is a large stock room for both flat and formed corrugated sheets.

Black plate for tinning, in logical sequence, is passed in a straight line at right angles to the tin mills, through the various finishing operations, at the end of the plant opposite the line of movement of the sheets. After being cut to size by shears conveniently located to the hot mills, the packs are opened and after pickling, are annealed. The black plate then is cold-rolled in the middle bay, after which it is again annealed and pickled and is delivered to the tin house by an electrically-operated car, operating on a depressed track and which connects the rolling mill department with the tin house. After tinning, the plate is delivered to the sorting and shipping department at one end of the tin house and which occupies practically one-half of this building. The plant is served by three shipping tracks extending, respectively, between the rolling mill and the tin house, the tin house and the sheet galvanizing and finishing department and paralleling the opposite side of the latter.

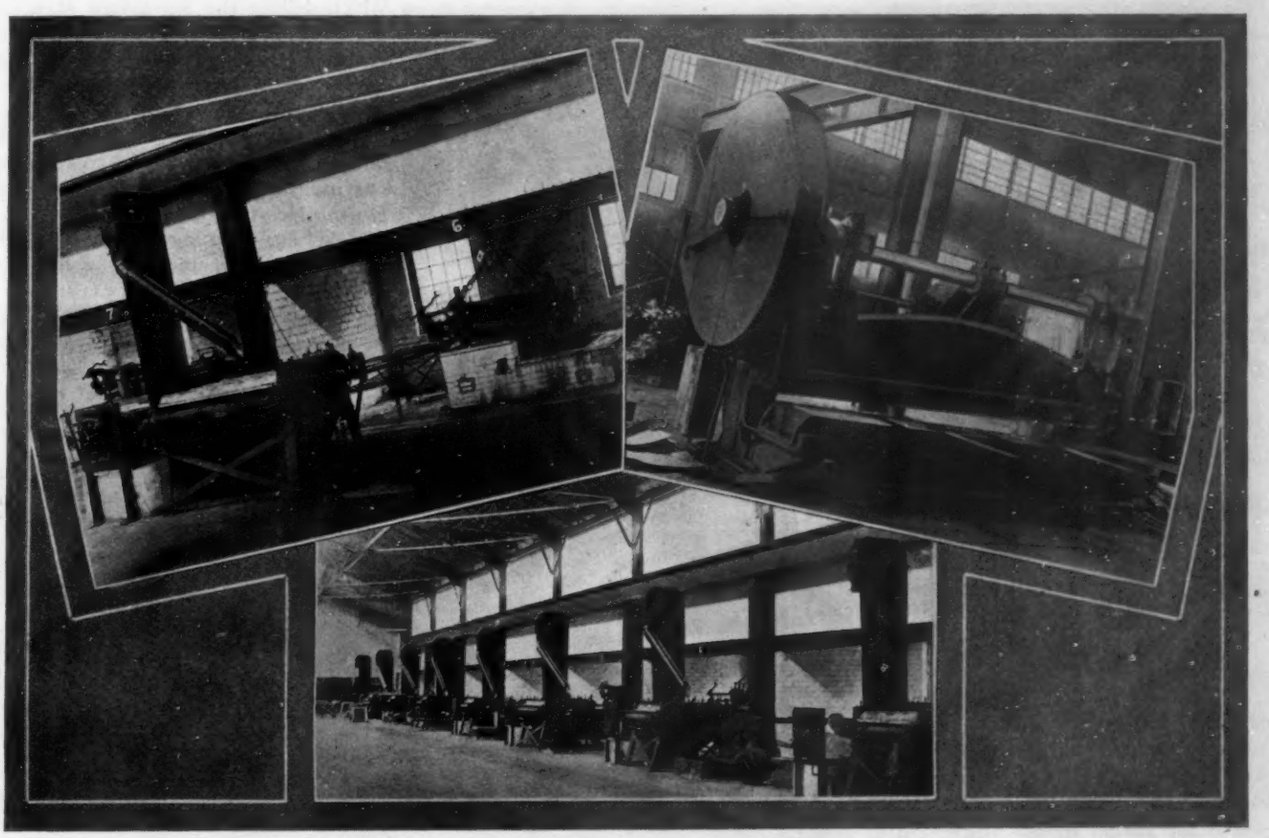


FIG. 6—ONE OF THE TINNING POTS WITH ITS FINISHING MACHINE

FIG. 7—ONE OF THE LARGE SQUARING SHEARS

FIG. 8—ONE SIDE OF THE TIN HOUSE, SHOWING THE FINISHING MACHINES

Rolling Mill Equipment

The six sheet mills and the six black plate mills are arranged in a straight line on either side of the 34 and 60 x 60-inch, 3,000-horsepower, tandem compound condensing engine. The sheet mill rolls are 30 inches in diameter and the tin mill rolls, 28 inches. The widths of the rolls are 28, 32, 36 and 54 inches, respectively, and the

necks are 23 inches in diameter. The mill housing for each stand weighs 16 tons and the shoe plate has a spread of 7 feet. The heating furnaces parallel the side of the building in front of the hot mills, the sheet mills being served by six pair and six heating furnaces and the tin mills by six furnaces. All of the furnaces are of the single type and are coal-fired. At one end of the building is located the bar bank and the bar shearing department. The latter is equipped with one single bar shear and one shear that will cut four bars at one stroke, both motor-driven. For each stand of tin mill rolls, one motor-driven doubling shear has been installed. For cutting and trimming sheets, five 144-inch, motor-driven shears are provided.

FIG. 9—PRESSES FOR STAMPING METAL SIDING AND CEILING

The drive from the engine to the hot mills is of the double gear type, the engine operating at 65 revolutions per minute, being geared to the mills at a ratio of 2½ to 1. The bed plate of the engine weighs 50 tons and the flywheel, which is 25 feet in diameter, weighs 85 tons. The engine is lubricated by the S. F. Bowser gravity oiling system, which has a capacity of 300 gallons per hour. Both the hot mills and the engine were installed by the Mesta Machine Co., Pittsburgh.

Cold Rolling Department

In the middle bay are located the 13 stands of cold rolls, including four single stands and three tandem stands of three each. The rolls are 24 inches in diameter and 36, 40 and 48 inches in width, respectively. The cold mills are driven by a 1,500-horsepower, 22 and 42 x 48-inch tandem compound Allis-Chalmers engine, operating at a speed of 80 revolutions per minute. The speed of the rolls is reduced by a train of gears to from 45 to 52 revolutions per minute. The cold mills are illustrated in Figs. 2 and 3. In the center bay also are located the two Mesta, steam-driven pickling machines.

The eight annealing furnaces located at the side of one end of the north bay are of the coal-fired, double type. All of the electric traveling cranes in the rolling mill building were installed by the Morgan Engineering Co., Alliance, O. The hot mill bay is commanded by two 25-ton cranes, the cold mill bay by one of 10 tons capacity and the annealing bay by two cranes of 10 and 20 tons capacity each.

The tin house is 43 x 440 feet and is equipped with 20 tinning pots for coating all of the black plate made, as none of the latter is shipped in the uncoated form. The pots are coal-fired and the tinning rolls are steam-driven. The cleaning machines are motor-driven, the bran or other cleaning material being projected onto the cleaning rolls from a spout attached to a conveyor at the side of each machine. A view of one of the tinning pots and a cleaning machine is shown in Fig. 6 and Fig. 8 illustrates a section of one side of the tin house. The cleaning material falls into a trough underneath the rolls and is returned to the conveyor by a screw. The tin house is commanded by a 5-ton Morgan crane. The sorting, boxing and shipping department occupies one end of this building.

Sheet Finishing Department

The sheet finishing building, which is 150 x 600 feet, contains the galvanizing, formed products and shipping departments. The galvanizing equipment consists of two Mesta picklers and three, coal-fired galvanizing pots. This department is partitioned off from the rest of the building, with openings in the wall for the conveyors, which deliver the galvanized sheets to the cooling wheels, Fig. 10. This department is commanded by a 5-ton crane. In a section of this building adjoining the galvanizing plant, all of the formed products are made. The equipment consists of corrugating, curving and metal shingle machines, two presses for stamping metal ceiling and siding, painting rolls, etc. The corrugating machine has a capacity for sheets, 144 inches long. Practically one-half of the sheet finishing building is occupied by the sheet warehouse and shipping department. The four platforms which command the three shipping tracks are of sufficient length to permit of loading 50 cars at one time. The cars are switched in the yard by a locomotive built by the Davenport Locomotive Works, Davenport, Ia. The steel work for all of the buildings was fabricated and erected by the Riter-Conley Mfg. Co., Pittsburgh.

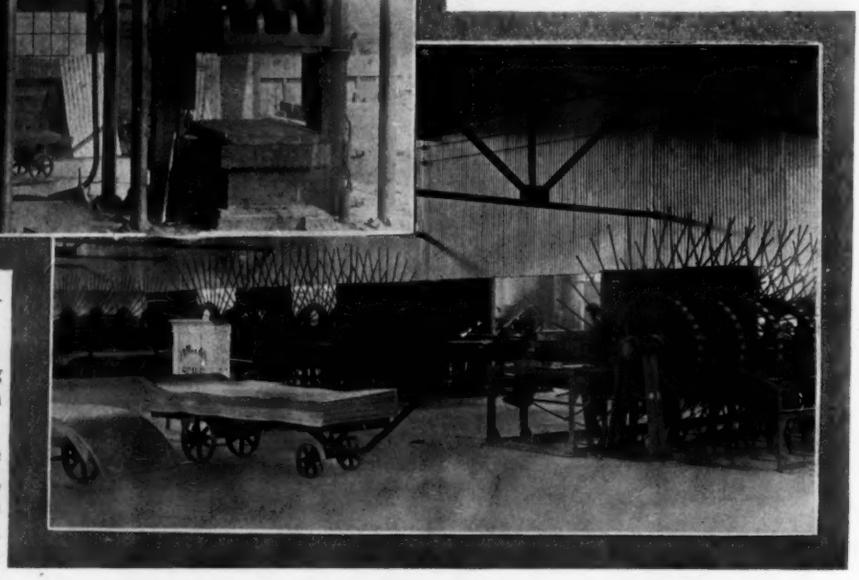


FIG. 10—COOLING WHEELS IN THE GALVANIZING DEPARTMENT

The power plant adjoins the rolling mill building, steam being generated

in six Stirling water tube boilers of 500-horsepower capacity each. The electric current for power and lighting is furnished by two 200-kilowatt Westinghouse direct current generators direct-connected to two 17½ x 21-inch engines, installed by the Buckeye Engine Co., Salem, O. The water supply is obtained from the Mahoning river, being supplied to the plant by a DeLaval centrifugal pump, direct-connected to a 75-horsepower Westinghouse motor. The pump operates at a speed of 1,100 revolutions and has a capacity of 3,500 gallons per minute. Coal is received on an overhead track, extending between the rolling mill building and the power house. The coal is discharged from the cars into concrete hoppers on the one side for the boilers and on the other side into bins for firing the sheet and tin mill heating furnaces.

Jonathan Warner is president of the Trumbull Steel Co., and W. T. Hardesty, vice president and general manager, formerly was one of the district managers of the American Sheet & Tin Plate Co. and prior to his present affiliation was connected with the Empire Iron & Steel Co., Niles, O. W. N. B. Ward is assistant to the president, D. W. Kerr is secretary and treasurer, and G. T. Thomas is general manager of sales. W. S. Brangham, superintendent of the tin house, has had a wide experience in this line of work, formerly having been employed by the American Sheet & Tin Plate Co.

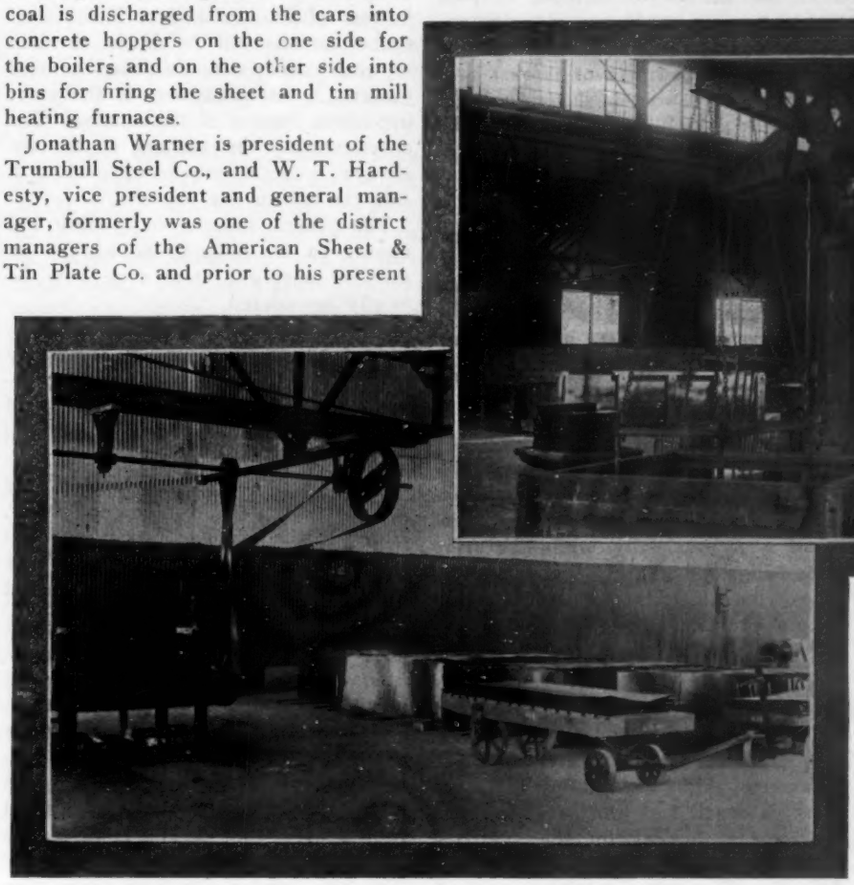


FIG. 11—ROLLS FOR PAINTING ROOFING

The Stoner Coal Co., Connellsville, Pa., has given notice of change of name to the Connellsville Coal & Coke Co.

Electric Steel as a Commercial Product

The Illinois Steel Co., Chicago, which for some time has had in operation an electric refining furnace of the Heroult type, gives the following in a booklet recently issued as among the grades of alloy steel that have been successfully produced:

Medium nickel chromium steel, containing from 1.50 to 2 per cent nickel and from 0.75 to 1.25 per cent chromium.

High nickel chromium steel, containing from 3.25 to 3.75 per cent nickel and from 1.25 to 1.75 per cent chromium.

Low nickel chromium steel, containing 1 to 1.50 per cent nickel and from 0.30 to 0.70 per cent chromium.

Nickel steel, containing 3.25 to 3.75 per cent nickel.

The carbon content in all of these grades may range from 0.15 to 0.45 per cent, or higher, as desired by the user.

In the electric furnace ideal conditions obtain for the manufacture of these high grade steels. The neutral atmosphere in which the steel is melted, coupled with the small tonnage unit of the heat, permit of the alloy being introduced and controlled accurately, thus insuring a uniform and satisfactory product. Uses for which electric steel are giving excellent results include the production of axles, side rods, piston rods, crank pins and tires of locomotives; gears, crankshafts, driving shafts, connecting rods, frames, springs and axles of automobiles; bit and jar steel for well and blast hole drills; vehicle and coil springs; general machinery forgings and drop forgings in great variety.

The use of electric steel, in fact, embraces practically the entire range of steel consumption where durability and resistance to wear and shock are essential features. It can be supplied in many forms, such as plates, bars, billets, blooms, etc. The product of the electric furnace is a steel of great homogeneity and chemical purity, solid and dense in structure. It is free from the deleterious gases, slag and segregation. An important and distinguishing feature of the process is that the furnace is practically sealed during its operation. This, coupled with the small capacity of the furnace, 12 to 15 tons, enables the steel maker to control the quality of his product with great accuracy. Electric steel compares favorably in quality with crucible steel.

FIG. 12—ONE OF THE MESTA PICKLING MACHINES

The Empire Voting Machine Co., Jamestown, N. Y., has been purchased by the Triumph Voting Machine Co., of Boston. The plant of the Jamestown company will be continued, but its offices will be moved to Boston. The buying of the Empire company means the settlement of a litigation between it and the Triumph company, which has been going on for year on certain patent rights.

Mining Methods on the Mesabi Range

Extent of This Great Iron Ore Deposit With Details of the Various Systems of Mining—Economies of Steam Shovel Operations

"Mining Methods on the Mesabi Range" was the subject of a report on operations in this great iron ore mining district, presented at the annual meeting of the Lake Superior Mining Institute, held from Aug. 26 to Aug. 30 at various points on the Mesabi range. Attention is directed to the formation of these ore bodies which are essentially flat deposits of great area as compared to their depth. As an illustration, one of the larger deposits, located near Chisholm, has been proved by the drilling on contiguous 40-acre tracts to be 2½ miles in length, and to average three-quarters of a mile in width. Within this area, however, there are some isolated barren portions where ore concentration has not taken place. This ore body is overlaid in some places by slate or taconite and glacial drift; in others, by glacial drift alone. The average of 202 drill holes through to the bottom of the ore was 58 feet of ore and 76 feet of glacial drift and rock above. The depth of ore ranged from 5 to 243 feet, while the glacial drift and rock ranged from 11 to 215 feet.

Taking the whole range into consideration, it may be said that the ore bodies are generally less than 200 feet thick, with a maximum of 500 feet.

Mining Methods

There are three general methods in use at the present time in mining these ore bodies:

Underground Mining.—The ore being mined by hand and hoisted through a shaft, the underground openings being supported by timber.

Open Pit Mining.—Where the material above the ore body is first removed and the ore then mined by steam shovels and loaded direct into standard gage railroad cars.

Milling-Pit Mining. — A combination of the two former methods, the material above the ore body being first removed, after which the ore is mined through underground openings and hoisted through a shaft.

The selection of the method of mining to be adopted involves a great many considerations and calls for experienced engineering and business judgment. Regardless of the method to be adopted, its selection should be preceded by thorough drilling to determine the limits and size of the ore body and the grades of the ore. Maps showing the top and bottom contours of the ore, and cross-section maps showing relative thickness of stripping and ore are indispensable.

In general, underground methods are used for those ore bodies lying under slates or taconite, or deep glacial drift. It is an alternative method, adopted only when the other two methods are out of the question. About the only consideration in its favor is that production can be obtained quicker and with less initial cost than with the other methods.

Open pit mining is used for the larger bodies of ore lying under comparatively shallow surface material and where the operating company is able to make the large initial expenditure in stripping. Besides permitting the lowest operating cost, it has many other advantages. The capacity for production from an open pit is enormous as compared to a shaft. One 40-acre tract opened as an open pit, provided the approach can lie on adjoining land, operating with two shovels and five locomotives, can send forward 9,000 tons daily, while the same area being operated as an underground mine, hoisting through one shaft, would ordinarily produce about 2,000 tons daily.

The milling pit method of mining is adopted generally for the smaller bodies of ore lying under comparatively shallow surface material. The amount of initial expenditure for stripping is much less than for an open pit, where the cost of the approach is a large item. The cost of production from a milling pit lies between that of open pit and underground mining.

Underground Mining

There is one prevailing method of underground mining in use on the Mesabi range at the present time. This is the top slicing or caving method. The main points of this are as follows:

A top slice over the whole area of the ore body is removed, using timber to the full height of the ore. As fast as the various rooms of this top slice are worked out, the bottoms are covered with boards, and the timber is blasted down, allowing the overburden to cave and fill up solidly the space formerly occupied by the ore.

When the top slice is out, another slice over the whole area is taken out just below it, also using timber the full height of the slice, up to the boards of the slice above. Rooms are blasted-in as fast as they are mined-out and the cave follows. Successive slices are taken in like manner to the bottom of the ore body. The use of timber to the full height of the ore in each slice, thus insuring a high percentage of extraction, is the most important feature of this method. The cross-cuts to the various rooms are always in solid ground, providing a safe retreat for the miners.

The general practice in opening and mining an ore body to be worked on the top slicing system may now be briefly considered.

For an ore body of considerable size, a shaft 8 x 20 feet outside is largely used. There are two skip compartments, 5 x 6 feet, and one ladder and pipe compartment, 6 x 7 feet, with 6-inch dividers. The sets are of 12 x 12-inch timber. The shaft is located near the deepest part of the ore body, either in the ore itself or in the adjacent rock. From this position the drainage of all the ore to be mined through the shaft may be taken care of.

Sinking the Shaft

Usually the sinking of a timber shaft, somewhere near the main shaft, is begun at the same time as the latter. From one to three additional shafts, depending on the size of the mine, are sunk at advantageous points. The size may be 6 feet square, or 6 x 9 feet.

Where the drilling has been sufficient, one or more troughs of deep ore will be found running through the ore body, generally from northwest to southeast, or from west to east, with the deepest part of the trough at the easterly end. It is in these troughs that the main drifts are located. The chief considerations are to have them near the bottom rock and still have them extend as near to the limits of the ore body as possible. The idea is to make the motor tramming long and the hand tramming short. When an ore body is 50 feet thick or more, it is good practice to locate the main level high

enough up in the ore body so that it will extend a considerable distance from the shaft, another main level being opened up nearer the bottom later. If the ore trough is wide enough, two parallel drifts, from 60 to 100 feet apart, are driven, connected by a loop near the shaft. The advantage of two drifts is in opening up the ground quicker for drainage; small drifts across connecting them improve the ventilation; if one strikes rock unexpectedly it can be discontinued temporarily, while the other continues ahead, from which exploration of the rock encountered can be made. The main drifts are timbered with sets 5 feet apart, using 8 or 9-foot posts and 10 or 12-foot caps, with lagging over the back. Vertical raises, 4 feet square and without cribbing, are put up every 50 feet along the main drifts and carried up to the top of the ore.

The top sub-level is located at such an elevation that the average height of the ore to be removed will be from 12 to 14 feet, so that most of it can be taken out with drift sets. From each raise, 5 x 6-foot drifts, untimbered, are driven parallel with each other and at right angles to the main drifts, until they reach the limit of the ore body or the boundary line of the property. Here the stoping or slicing of the ore begins.

When a room is worked out, the side and ends next to the solid ore are closed up with cull boards to prevent the sand from mixing with the ore of the next room when it is mined. The bottom is also covered with boards if there is a slice to be taken out underneath. The double row of posts in the center, and those along cave side, throughout the length of the room, are blasted out and the caved ground follows and fills the room. There is usually no difficulty at this point, the room soon being filled up solid against the boards so that another slice may be started alongside after a few hours.

There are extensive stretches of ground in many of the Mesabi mines where the ore is overlaid by firm taconite or slate. In such cases the top slice can be taken out with the use of props, spaced irregularly as required. The maximum height of props used is 20 feet. Often the ore does not exceed this height and, consequently, can all be mined out in one slice. Where such conditions occur the cost of mining is considerably lessened.

When the ore in any part of the top sub-level has been mined out back to 20 feet from the raise from the main level drift, a second sub-level is opened by starting another cross-cut from the raise, directly under the one above, and of the same dimensions, 5 x 6 feet. Parallel cross-cuts on the same level are driven from each raise as other places above are finished. The distance below the bottom of the top sub-level at which these cross-cuts are started depends on the total thickness of the ore down to the main level, measured from bottom to bottom. This total height is divided so that the sub-levels will be from 11 to 15 feet high. Where 11 feet must be selected there would be 5 feet of solid ground over the back of the second sub-level cross-cut up to the boards of the top slice above. The ground is usually firm enough so that these cross-cuts will stand without being timbered. They are driven to the boundary line or until they strike the bottom rock, when slicing begins and is carried on in the same manner as on the top slice. The rooms are timbered up to the bottom boards of the slice above.

The top-slicing or caving method of mining can be adapted to all conditions met with in underground mining on the Mesabi range. It is favored alike by fee-owner and operator, for in these days of rapidly diminishing ore reserves, wasteful methods of mining are no longer tolerated. In any method of mining, the safety of the miner should be the first consideration; the conservation of the ore, the second.

Open-Pit or Steam Shovel Mining

Open-pit or steam shovel mining applies to that system of mining where the ore from an open pit is loaded by steam shovels direct into railroad cars.

The first shipment from some Mesabi range mines have been fully as simple as stockpile loading, but as depth is reached, approaches, grades of incline and layout of tracks to reach the various parts of the ore body require skillful engineering.

This system is the cheapest method and is adopted wherever it appears practicable. Recent practice shows the use of open-pit mining for ore deposits that were formerly considered underground projects. In fact, some mines that were opened as underground propositions have been changed to the open system, notwithstanding the fact that a considerable tonnage of ore had already been removed and that stripping and mining both presented conditions less favorable than before underground mining was undertaken.

Among the mines originally operated by underground mining and later changed to the open-pit method is the Commodore mine at Virginia. It consists of one forty and is surrounded by the Lincoln, Union, Lone Jack and Missabe Mountain properties. Several hundred thousand tons had been mined through underground operations when it was decided to change to open-pit mining. Adequate and suitable dumping grounds were difficult to obtain and to complete the stripping necessitated dumping 800,000 yards on the Commodore forty, over one-half of which composed the stripping area of the open pit. The waste dump finally reached a height of 87 feet and the height from top of ore at deepest stripping point to top of dump was 201 feet, showing that some of this stripping material was elevated in its transportation 201 feet, which was accomplished without going off the mine forty, except at the ends of two tail tracks where they ran onto adjoining property. The tracks from shovel to dump consisted of four switch-backs on a 5 per cent grade.

The equipment was standard gage dump cars and Shay geared locomotives of 80 tons weight on drivers. These locomotives are slower than the rod engines, but have more tractive power, particularly on starting their loads on heavy grades and curves. In mining at this property both the rod type and Shay geared locomotives are used and a comparison of the two types under similar conditions shows the rod engines more satisfactory on good tracks and low grades, but on grades over 3 per cent and particularly where necessary to start the loads on heavy grade the geared locomotives had the advantage.

Limited area, depth and shape of ore deposit, yard facilities, etc., have made conditions at this property for steam shovel mining more severe than most open pits on the range. During one season considerable loading was done on a 7 per cent grade, the Shay locomotives being able to start and haul three loads and the rod engines two loaded ore cars of 40 tons each. A few years ago it was the practice to lay out open pits with grades not over 2½ per cent, and with curves not exceeding 20 degrees. While it is desirable to keep within these limits of grades and curves, nearly every mine has found it possible and necessary to exceed practical railroad conditions.

The actual loading of the ore by steam shovels is practically the same all over the range. At some mines all the ore must be blasted in order to loosen it for better loading, while at other mines the shovels are able

to handle the ore without any blasting.

Sixty to 80-pound rails are used for mine tracks, the heavier steel being favored. The temporary loading tracks have to be changed for each succeeding shovel cut. At some mines, and especially where the loading tracks are straight and of the lighter rail section, it is the practice to jack up the track to be moved and then line or heave it over with bars. At other mines new track is laid behind the shovel and in place for the next cut, the previous track being taken up.

There are several important special features in connection with open-pit mining of which mention should be made.

At the Biwabik mine, which has the distinction of being the first mine on the Mesabi range to use the steam shovel, much of the ore, a high grade Bessemer, requires crushing. Recently a new crusher of the gyratory type, with a 48-inch receiving opening, has been put in operation. It has a capacity of 1,000 tons per hour and is the largest gyratory crusher that has ever been installed.

Concentrators

On the western end of the range, many of the ore bodies contain layers of fine sand, lean ore and broken taconite which must be separated from the ore in order to make it merchantable. After several years of experiment a large concentrator was erected on the east side of Trout lake, at Coleraine, by the Oliver Iron Mining Co., which has been in successful operation since 1909.

The Wisconsin Steel Co. erected a concentrator at Nashwauk, consisting of two units, which began operations in 1912.

At the Leonard, Shenango, Commodore and some other pits, low grade material containing 35 to 49 per cent iron is being stockpiled. This material is unmerchantable at the present time and being mostly paint-rock it will probably not yield to concentration.

At the Brunt mine, at Mountain Iron, a drying plant is in operation for removing the excess moisture from the ore. The moisture is being reduced from 18 to 20 per cent down below 8 per cent, resulting in considerable saving in freight charges and rendering the ore more acceptable to the furnacemen. Another drying plant is in course of erection at the Whitesides mine.

The milling system is adapted for mining of the ore from deposits favorable for stripping, but where the size of the deposit, or its location, is such as to make it impracticable to mine as a steam shovel proposition.

The relative depth of surface and ore, or rather the relative proportion of over-burden to be removed to the amount of ore uncovered, the size and shape of the ore deposit, the space and facilities for trackage approaches, and relative outlay for equipment and development, are the determining factors for choosing between the milling and steam shovel methods. What is termed the *milling system* on the Mesabi range is in reality a form of what is termed *underhand stoping* on the older ranges, and the development is by shafts, tramming levels, etc., much the same as in underground mining. The overburden is removed from the surface of the ore which permits of the use of underhand stoping by working the ore into chutes, from which it is drawn out on the tramming levels and handled in the same manner as in other underground mining systems.

In opening up a proposition on the milling system, the area to be stripped, the stripping approaches, location of shaft, shaft house, tracks and mine buildings are decided upon. The work of stripping or removing the overburden is usually the first work started, and while this is progressing the working shaft is sunk, tramming levels opened up and raises driven to the top of the ore deposit. Raises are usually 4 x 5 feet or 5 feet square, and are put up at intervals of from 30 feet to 40 feet, and are equipped with chutes at the bottom. When ready to start mining, milling or underhand stoping is started by drilling holes around the tops of the raises and blasting them so that their burden will fall into the raises. After blasting, the loose dirt is usually picked down or loosened, or at least as much of it as will readily run into the raise, after which blasting is again resorted to. It is customary to drill what are usually called collar holes first, and then carry the stope up the bank by successive blasting and picking down the loose dirt as long as it will run into the raises. The Mesabi range ores are of such character as to break up quite fine and run readily at an angle of 45 degrees, and in dry weather the ore will run on a slope of 38 degrees. Results are best after mills or funnels have been enlarged, and the larger the mill the better. When blasting large quantities of ore, and particularly when starting mills, the ore from the blasted holes falls to the bottom of the raises with such force that it often packs so hard that it will not run out of the chutes. This necessitates the use of chute bars to loosen the ore and get it running. It often happens that the ore continues to hang up higher than can be reached with bars, when other means must be employed. At the Monroe mine, where the raises were very high, a system of sub-drifts were driven above the working level, connecting all the raises. This plan gave an opening for barring a hang-up raise through openings in the lagging or raise cribbing. At the Albany mine the main level drifts were made two sets high opposite the raises or chutes. This permitted the use of longer bars and facilitated the process of barring. At the Iroquois mine, a chain or wire rope was placed through the raise, and when hung-up the rope or chain was pulled up by a small hoist and pulled down by a number of men standing on the level.

Hang-Up Troubles

At the Jordan mine the trouble with hang-up raises was obviated to a large extent by working down to the back of the tramming level the first two mills, and after that the raises were holed through into the sides of the slopes. The raises being from 30 to 40 feet apart would hole through into the milling slopes when 30 to 40 feet high. The first raises were 85 feet high and caused a great deal of trouble with hang-ups. The subsequent raises being from 35 to 40 feet high were much freer from hang-ups than the longer raises. By starting milling on the lower sides of the raises where they holed through into the slopes, the distance from the collar of the raise to the chute was seldom over 30 feet, and a hang-up could be broken down by barring or drilling from the top, if the trammers failed to get it running by barring from below.

Another plan adopted to some extent was to make the raises larger at the bottom and tapering upward, but the construction of the chutes permits the ore to accumulate back in the corners and the raise openings soon become smaller. While the hang-ups occur from the impact of the falling burden, resulting usually from blasting into the raises, the trouble from this source is contributed to by the raise opening becoming smaller and smaller, from moist ore accumulating and caking quite hard all around the raise. From time to time it is necessary to clean out the sides of the raises for a distance above the chutes.

The production by the milling

method is usually irregular and varies from day to day, being influenced largely by weather conditions, as well as by the steadiness of the labor employed. During a spell of nice weather and with a full crew of men, the daily production may be at the maximum, but a heavy rain drives home the men working in the mills, and washes out the slopes, making holes and gullies in the mills, and blocking the chutes with loose ore and water. If much water collects in the mills and chutes, any attempt to open and draw the chutes results in a rush of sloppy ore and water, filling the level and necessitating cleaning-up before tramming can be resumed. Dry ores naturally run much better in the mills than wet ones, and some ores that would run readily on a 45-degree slope during dry weather become soaked and will scarcely run on a 50-degree slope when wet.

The milling system also is used for the lower parts of ore bodies opened for steam shovel mining, when the depth renders the use of locomotives impracticable. This system permits the recovery of all the ore, is more economical than underground mining and is, perhaps, a little safer. It is subject to the accidents incident to the limited underground work and blasting in the open, but the greater danger is from men being carried into chutes by slides. This is guarded against to some extent by the use of ropes.

The milling system has been used at the Norman, Auburn, Fayal, Adams, Sharon, Jordan, Albany, Monroe, Duluth, Leonard, and a few other mines.

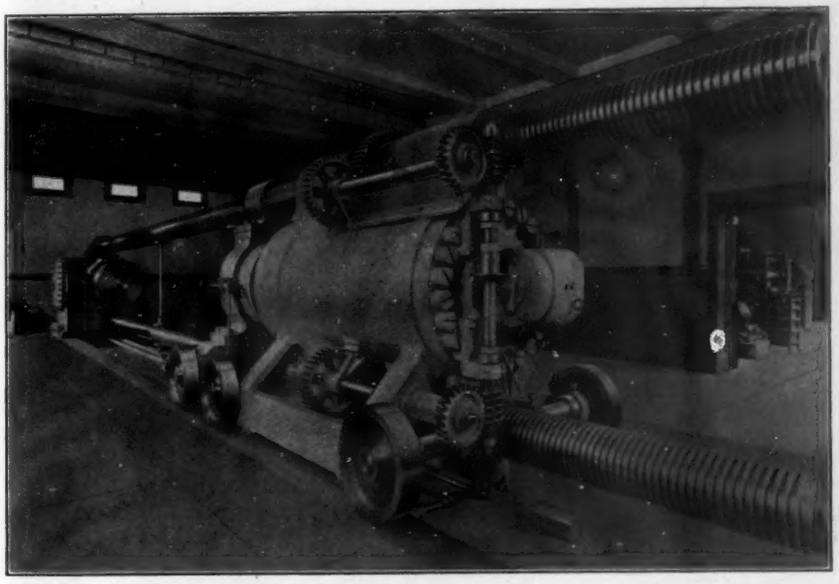


FIG. 1—POWERFUL PRECISION TESTING MACHINE INSTALLED BY THE UNITED STATES BUREAU OF STANDARDS

Largest Precision Testing Machine in the World

The United States Bureau of Standards, Washington, D. C., recently has installed a machine designed for testing columns, blocks, beams, girders and other shapes of steel, iron, wood, concrete, reinforced concrete, etc., to determine the breaking strength, the spring under load and other valuable engineering data. The machine can take specimens of any length up to 34 feet and can exert a pull of 1,150,000 pounds or a crushing force of 2,300,000 pounds.

As shown in Fig. 1, the machine consists of two main parts connected by two large screws. The stationary section of the machine, shown at the extreme left, Fig. 1, contains the mechanism by which the force exerted on a specimen is measured. The other part, termed the press, is movable and consists essentially of a hydraulic cylinder mounted on wheels. It will be noted that the head of the hydraulic piston is individually mounted on wheels and has a movement independent of the cylinder. The oil which is used to produce the hydraulic pressure is supplied through a pipe, which telescopes or elongates as the press is moved. When making a test, the press is moved to the proper point, depending on the size of the specimen, by the Westinghouse motor, mounted on the machine. The specimen then is set in position, being gripped by jaws, mounted on each of the ends of the testing machine, if it is to be put under tension, or held between two heavy plates, if it is to be compressed. The hydraulic piston is then slowly forced forward or pulled back, depending on whether the test is compression or tension, until the specimen under test is ruptured. Fig. 2 illustrates the Dean pump, driven by a 20-horsepower motor, which supplies the oil for operating the hydraulic cylinder. This pump is capable of delivering oil at a pressure of 3,500 pounds per square inch.

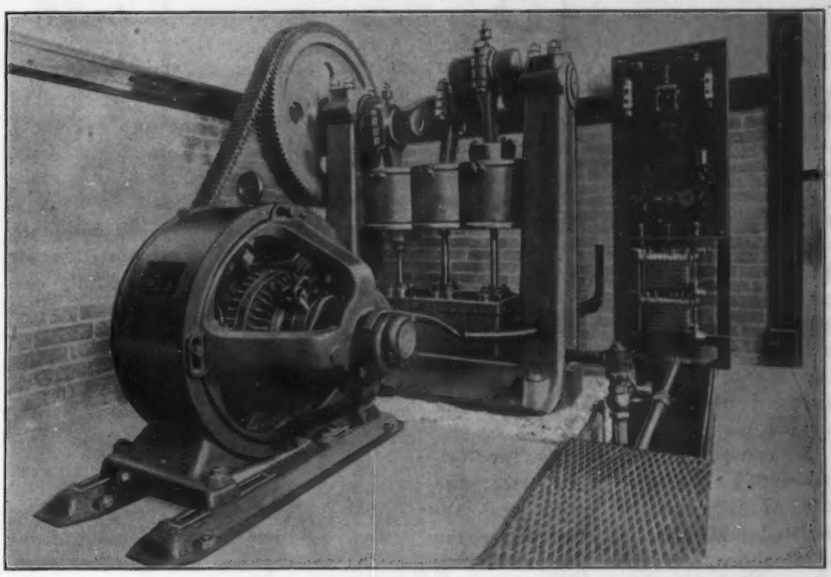


FIG. 2—MOTOR-DRIVEN PUMP WHICH SUPPLIES OIL FOR OPERATING THE HYDRAULIC CYLINDER

The Tabulating Machine Co., 25 Broad street, New York City, has issued a booklet entitled "A Business Compass", which describes methods of tabulating and analyzing statistics of all kinds. The method depends on the use of punched cards.

Increasing the Production While Rebuilding---I

Description of the New Shops of the Canadian Locomotive Co., With Data on Some of the Numerous Machining Operations

By C A Tupper

Few manufacturers, even the most experienced machinery builders, are aware of the enormous amount of detail which enters into the construction of a modern locomotive, nor of the time which each separate operation takes. Therefore, the statement that the Canadian Locomotive Co., Ltd., Kingston, Ont., had decided to increase its output from 6 to 25 locomotives per month would seem to indicate no more than a gratifying increase of business; but to the management it meant nothing less than a new plant.

To construct one, however, involved difficulties. In the first place, the site of the existing works was restricted. However, it lies along the lake shore between two unloading slips and adjacent to railroad tracks, and another site as favorable could not readily be obtained. Therefore the management wished to retain it. At the same time it was desired to avoid not only interfering with production, but also to steadily increase it.

A firm of consulting engineers, Henry Goldmark, New York City, was accordingly engaged and plans drawn for new shops to be constructed over and around the old buildings. This work, which was started some months ago, is being successfully carried out, and the needed increase in output has also been gained. Furthermore, the methods of handling raw materials, castings and finished parts, as well as assembling and erecting, have been greatly improved.

Plan of the Plant

Fig. 2 shows a ground plan of the works as they will appear when completed, except that the carpenter and pattern shops, for convenience of illustration, have been placed at a right angle to their true position. The machine shops, which extend partially along two sides and join in the shape of an ell, have a combined length of 602 feet and a width of from 56 to 77 feet.

The new erecting shop, into which both the old and new machine shops will open, lies in the right angle formed by them, as indicated by the drawing. It is 275 feet long, 134 feet wide and is served by Whiting cranes.

Adjoining and parallel with it are the boiler shops, tank and tender shop and foundry, with an extension of the first named which forms an ell around the erecting shop at the south end.

The new boiler shop will have a length of 397 feet, with a width up to 135½ feet in the ell section. The tank and tender shop has an equal length and is 67 feet wide. At present the equipment of these two departments, which will be extended largely upon completion of the new structures, is merged in one building. It includes a full complement of shearing, punching, bending, riveting, and

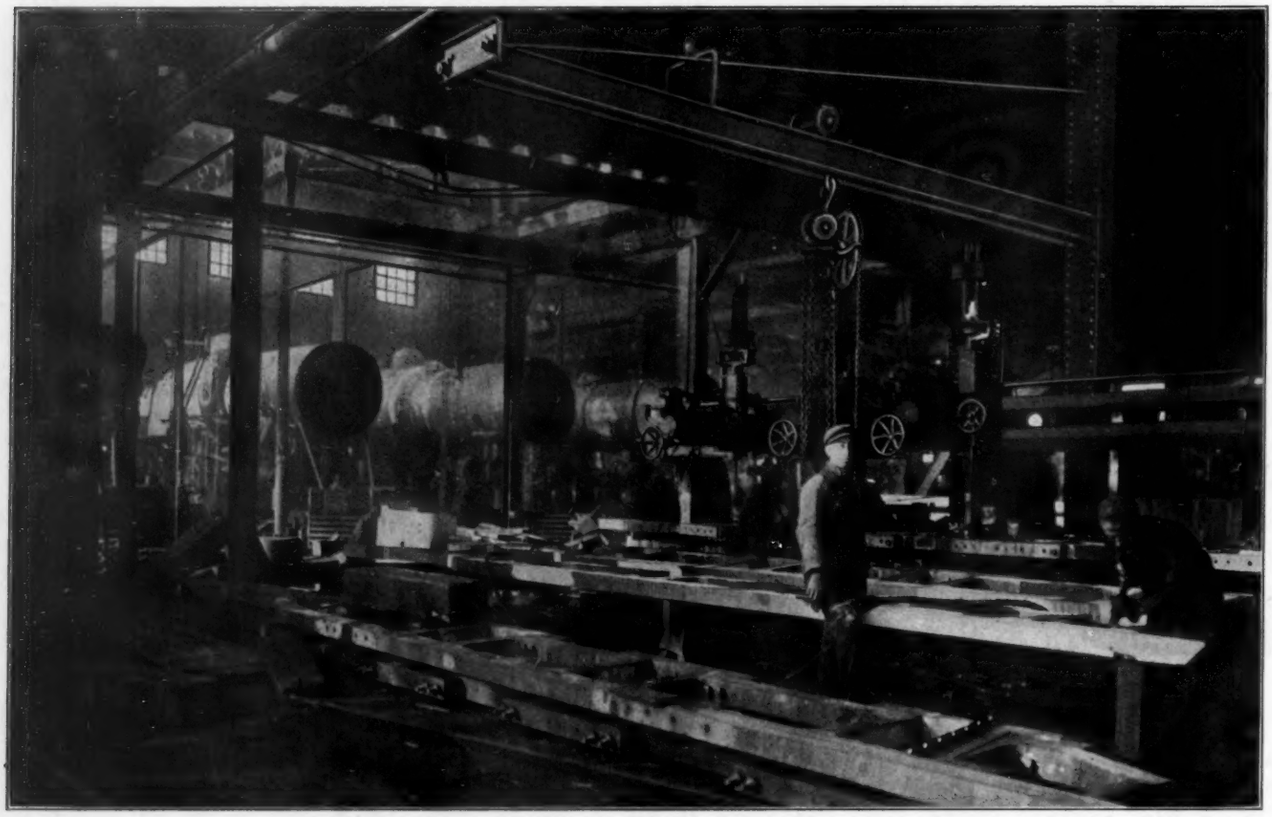


FIG. 1—SETTING LOCOMOTIVE FRAMES FOR MACHINING BY FOURS

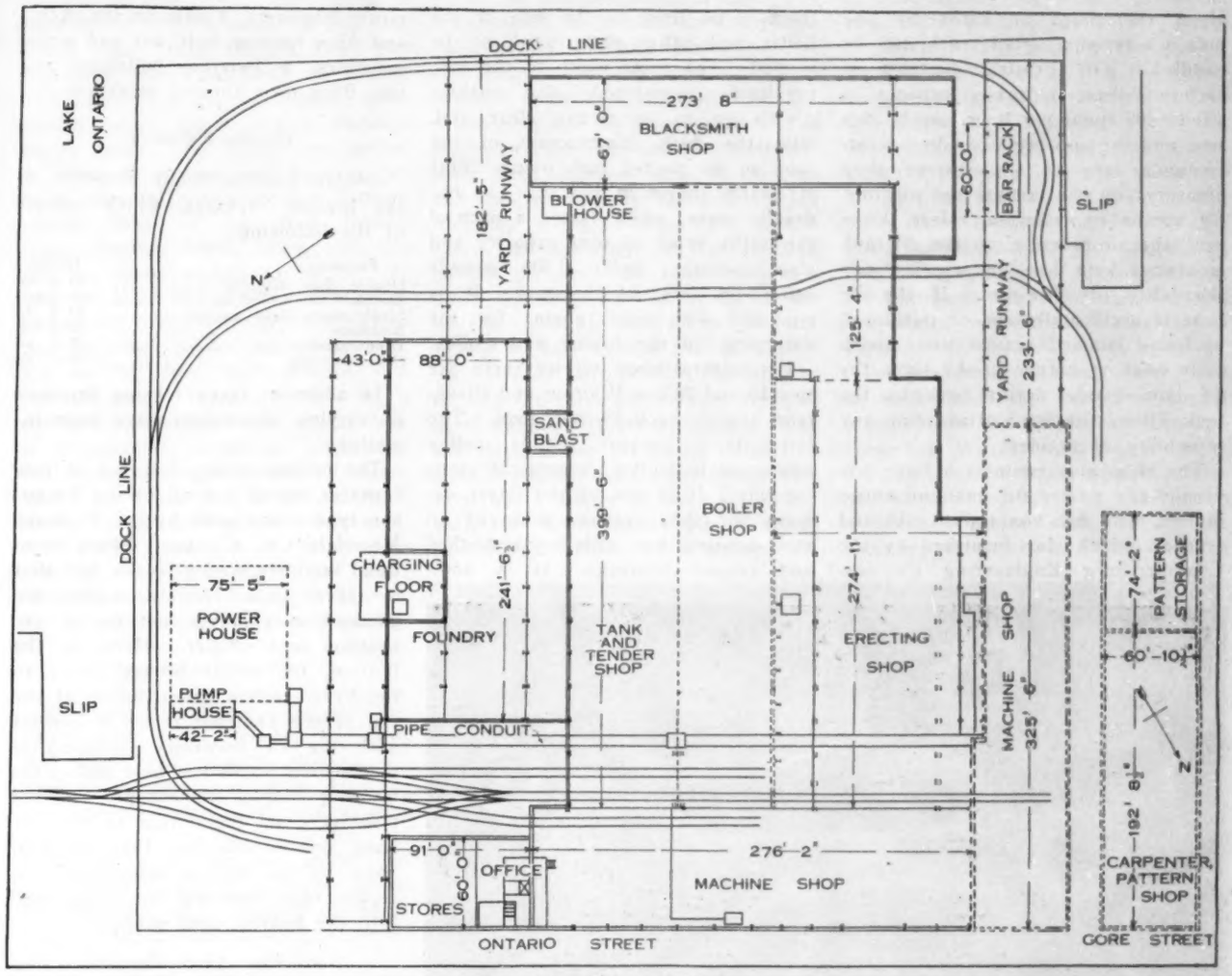


FIG. 2—GROUND PLAN OF THE PLANT OF THE CANADIAN LOCOMOTIVE CO. AT KINGSTON, ONT.

welding machinery, with the usual auxiliary apparatus.

Prominent in the work of the shop are five machines built by the Cleveland Punch & Shear Works Co., two having 48-inch and two 60-inch depth of gap, one being a bar shear. The fifth is a duplex unit, one frame having a 36-inch and the other 60-inch open gap. The three machines last mentioned are used for the standard work of the shop, while the first named, which are of special high speed design, can be applied with excellent economy to light locomotive work where there are a great many irregularly-spaced holes to be punched.

Most of the cold cutting, outside of plate shearing, is done with a Ryerson high speed friction saw, the cutting blade being mounted directly on the shaft of a motor especially designed for this class of work. The method used here is coming more and more to be regarded as the most economical yet devised.

Another machine of unusual interest is a pneumatic flue welder designed by the Draper Mfg. Co. With this a 2-inch boiler flue can be welded and swaged in about 5 seconds, making a smooth weld both inside and out and leaving the flue an even thickness. Scarfing and welding is also accomplished with this apparatus.

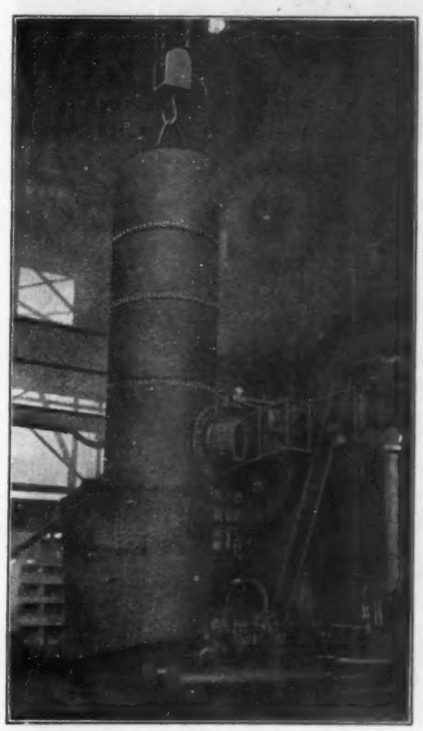


FIG. 3—BOILER AND FIREBOX HANDLED COMPLETE BY A CHAMBERSBURG HYDRAULIC RIVETER

Hilles & Jones bending rolls, an 8-head punch from Dempster, Moore & Co., Ltd., Glasgow, Scotland, a Bertram punch, a Newton saw, three Bertram and two American radial drills, a Bertram wheel press, a Bullard vertical turret lathe, a Newton double-head drill press, a duplex Bertram slotter, London & Smith shapers, Hilles & Jones and Long & Alstatter punches, floor grinders from the Ford-Smith Machine Co., Allen riveters, heavy riveting machines from Edward Harrington & Co., Philadelphia, carried on wall cranes, and 11 Ferguson furnaces are features of the equipment. The last named comprise a flanging and annealing furnace, a boiler flue furnace, three rivet furnaces and six portable rivet heaters. The latter are of particular interest. Each is self-contained, carrying a sufficient supply of oil for the ordinary day's work, and is rolled

about the shops or yards by one man wherever a small truck can be handled. The heating capacity of each of these portable furnaces is 300 to 400 rivets per hour, say ¾-inch size, and the apparatus can be operated under any of the various shop pressures on the compressed air line. By means of reducing valves, however, the air pressure on the oil tank is always kept low, overcoming any possibility of blow-ups. If the air hose is accidentally cut or punctured by being jammed against some sharp plate edge or corner in the shop, the oil immediately drains back to the tank, killing the fire and avoiding any possibility of accident.

The shop also contains a large hydraulic gap riveter for handling entire boilers, with fire box tops, tanks and tenders, which was furnished by the Chambersburg Engineering Co., together with crane, accumulator and a Snow pressure pump. This riveter has a depth of gap of 14 feet 6 inches, and a width of gap of 54 inches. The maximum capacity, at 1,500 pounds water pressure, is 125 tons; but, by means of a special system which has been worked out for this design, five multiple pressures of 25, 50, 75, 100 or 125 tons can be exerted upon the rivet, depending on the size of the rivet and the work to be done. The quantity of pressure work used is kept in direct proportion to the pressure extended, whether for 25 tons or more, so that there is no waste from this cause.

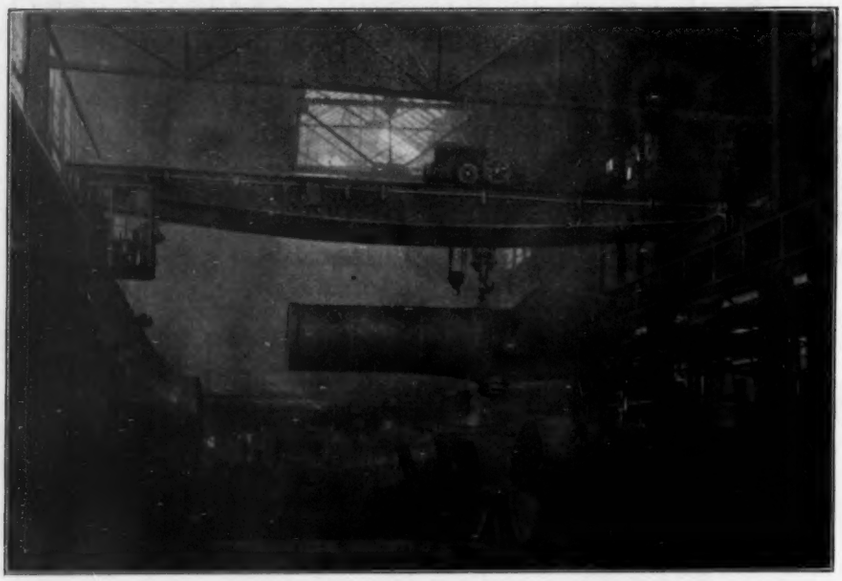


FIG. 4—BOILER AND FIREBOX BALANCED ON A CRANE

Another distinctive feature of the apparatus in this shop is the flush top of the riveter head, which permits work to be swung in; hence, as the bottom of the ram is also flush, there is no limit to the size of the boiler and other plate work to be riveted. The great width of the gap, previously mentioned, also enables fire boxes to be swung clear and, with the flush construction of the ram, to be riveted into place. This is clearly shown in Fig. 3. The hydraulic crane, which forms a part of the outfit, is of 20 tons capacity and also operates under 1,500 pounds water pressure for hoisting. It is equipped with hand chains for the movement of the bridge and trolley.

For general shop service there are two 10 and 20-ton Whiting and Cleveland cranes, each 64-foot span. The latter is a 5-motor, double trolley crane, each trolley having 10 tons capacity. It is one of the latest designs for shop service, being of all steel construction, with bronze-bushed and capped bearings. It is noteworthy, also, that the end trucks have bearings of the Master Car Builders' type.

Some of the economies effected in the plate and boiler work require so much explanation of detail that they will be covered in a separate article and comparisons are not nearly as favorable as they will be later on, as many operations, such as drilling, are crowded over into the machine shop.

The old forge shop is being replaced by a new structure 274 x 67 feet, with a 40 x 35-foot wing, which lies across the south end of the other shops.

The present equipment, which will be extended, includes three steam hammers from the Morgan Engineering Co., one built by the Erie Foundry Co., and one of the Glen & Ross type; Bradley and Billings & Spencer power hammers; Caplin shears, Acme and Ajax forging, bolt, nut and screw machines, a Bertram bulldozer and two Bliss drop forging machines.

Heating Furnaces

Interest centers chiefly, however, in the heating furnaces, which consist of the following:

Furnace.	Inches.
Double door slabbing	60 x 96
Double door blocking-out	60 x 103
Single door, light hammer	30 x 34
Bulldozer	36 x 108
Drop hammer	37 x 44
Case-hardening	28 x 60

In addition, seven forging furnaces of varying dimensions have been installed.

The burning of the oil in each of these furnaces, which are all of the Ferguson type constructed by the Railways Materials Co., Chicago, differs from usual methods, owing to the fact that it takes place entirely within the combustion chamber outside of the heating area proper. Here, at the bottom, the oil is broken down to the hydro-carbon gases, which at the top of the chamber come in contact with the air necessary to complete combustion. This not only makes the latter a simple, efficient process, but also increases the output of the furnace, due to the fact that the heat value of the fuel is immediately effective upon crossing the bridge wall into the heating area proper.

Machine Shop Facilities

In the new shop an improved blower system is to be installed for the furnaces; and the plans provide for a separate blower house annex, as shown in Fig. 2.

All of the forgings, with castings from the foundry, eventually find their way, of course, to the machine shops. An idea of the equipment provided for these shops, and of the work for which it is used can best be gained from a brief study of the various operations involved.

Taking the parts which compose a locomotive, from its contact with the rails up, the trucks and wheels are naturally the first to engage attention.

The equipment includes two heavy wheel lathes and a wheel and axle press furnished by John Bertram & Sons Co., Dundas, Ont. Turning the tires on a pair of large driving wheels is an operation which takes about 80 to 90 minutes, and truing the journals about 140 minutes. Boring the wheel centers on a Bertram mill requires, however, practically a full day. Turning the driving wheel axle takes 110 to 160-180 minutes, on a 30-inch Le Blond lathe. Truck wheel axles are finished in 45 to 150 minutes on a

smaller Bertram lathe. Key-seating is done in 40 to 60 minutes, by two machines from Alfred Herbert, Ltd. For the truck wheels of both the engine and tender there are, in addition, three smaller wheel lathes and a Bertram boring mill. The wheels are turned in about 60 minutes, and bored in 20 to 30 minutes. Cincinnati and Bertram planers finish off the truck frames, center castings, cradle brace, pedestals and the binder casting in 140 to 160, 120, 180, 30 to 40 and 45 to 60 minutes, respectively. The necessary drilling for the complete trucks takes, however, 1½ to 1¾ days, with Newton and Bertram drills. One of these is a double-head machine with which there is considerable saving by performing two operations simultaneously. Some minor work on the hanger brackets, blocks, spring saddles and other small truck parts is done in 20 to 60 minutes by a Morton shaper and Fairbank, Kennedy and Maylor drill press. Shoes and wedges are planed quickly.

Machining the Frames

Machining the frames is accomplished economically by a number of three and four head planers, slotters and drills of the London Machine Tool Co. and Bertram type. The main frames, clamped two or four together, are planed in a day or less apiece and slotted and drilled in somewhat under two days for each complete operation. The drilling, of course, includes reaming.

Planing and drilling the steam chests, including covers, pressure plates and stuffing boxes, involves only a number of simple operations, the longest of which is accomplished in 150 to 180 minutes.

The machining of the steam cylinders, valve gears, rods, etc., however, requires almost innumerable operations. The tools used include a Bertram boring machine, Sellers and Bertram planers, Newton, American and Bertram radial drills, Bullard vertical turret lathes, Jones & Lamson turret lathes, Ford-Smith and Bridgeport grinders, Norton gap grinder, Peacock & Taunett lathe, Newton and Bertram slab millers, Betts and Niles slotters, Stockbridge and Morton shapers and F. & J. Barnes and Bertram drill presses, besides hydraulic rod press, straightener, and other miscellaneous rigs.

Machining the Cylinder

Boring the cylinder requires nearly a day's work and planing it takes about 1½ to 1¾ days. Finishing the front and back cylinder heads, with the full complement of tools, requires 60 to 90 minutes, respectively. The latter figure holds also for the piston valve bushings. Packing rings can be turned in 15 to 20 minutes. These cylinder parts have been economically produced since the installation of the Bullard lathes. Drilling the front cylinder head requires 70 to 80 minutes and the back cylinder head, 110 to 120 minutes, while drilling the piston valve bushings may call for as high as 220 minutes. In some instances, however, the time consumed in the heavier drilling operations is cut nearly in half by the use of a Bertram duplex radial drill. Planing and turning the valve parts varies from 30 to 40 minutes for the yokes and 90 to 120 minutes for the valve strips and false seats, for each operation necessary, up to nearly or quite a full day each for the complete piston valves and stems. The time computed for the last named, however, includes straightening, centering and all work from the rough forging, while the following plates, skeleton rings, center piece, etc., are counted in for the former.

FIG. 5—THE ENCLOSED CRANE RUNWAY

Machining the valve gear and gear rigging is a complicated task, involving a multitude of operations. For one locomotive of an ordinary type they aggregated 113. Some, like the drilling of the throttle latch and handle, reverse lever parts, throttle lever quadrant and link block plates or slotting clearances for various bars and links, cutting keyways, etc., take only 5 to 15 minutes, while the combination bar and the radius lever each require a day or more for milling. Between these are operations such as drilling the rocker box, link brackets and eccentric cams, each in an hour or less, milling the eccentric jaws in two hours, planing the rocker boxes in three hours, turning the rocker arms in four hours, milling the radius bar in five and the eccentric rod, in six hours, and finishing the links, which take from ½ to ¾ day apiece.

Heavy grinding here and elsewhere in the plant is done on 20-inch, self-oiling floor grinders supplied by the Ford-Smith Machine Co., Hamilton, Ont. The spindles of these machines are unusually heavy for the size and are carried between taper steel safety flanges.

An interesting economy over former methods is the use of a shaper manufactured by the Stockbridge Machine Co., Worcester, Mass., for planing the steel quadrants of the reverse and throttle levers. The quadrant is a notched sector along which the lever moves and is held by a latch at any position desired, so as to regulate the cut-off in the cylinders. Such a quadrant, containing, say 28 teeth, can be finished in about 90 minutes, including the setting-up of the job. The use of the shaper is advantageous because of the accuracy of obtaining the proper tooth in the quadrant as well as in the saving of time, which is 30 to 60 minutes under the averages of other methods.

For the throttle rigging alone a large number of operations are necessary; but practically all of these can be performed with the lathes and drills, ranging in time from 30 minutes for turning the valve stems or drilling the dry-pipe, to nearly half a day for finishing the dome caps. The Jones & Lamson turret lathe has made an excellent record in this and other departments of the work.

For the production of the pistons, the use of Bullard turret lathes has also proven highly successful. The longest operation, that of boring and turning the piston head, takes no more than 90 to 110 minutes, scaling from this down to 45 minutes for the piston rod packing glands, which are subsequently drilled in 15 minutes. The piston for the air pump is naturally treated similarly and the same is true of numerous other parts. Small packing rings are finished in 5 to 10 minutes. Rod brasses require 20 to 90 minutes. Piston rods are each turned in 220 to 240 minutes, the gap ground in 30 to 40 minutes, and the key-seating done in about 40 minutes. Planing the crosshead takes ½ day or a little less; it is bored and reamed for the piston fit in 100 to 120 minutes and drilled in 20 minutes.

The connecting and other rods, straps and knuckles, and the pins and bushings pertaining to them are machined by planing, milling and slotting. For most of these operations ¼ to ½ day is needed.

The crosshead guides or slides are milled and ground in about ½ day each, while providing for the necessary clearance, shaping the guide blocks, etc., is accomplished in about 20 to 30 minutes per setting. Drilling these parts takes 10 to 60 minutes.

For turning crank pin forgings, including both the roughing and finishing cuts, about 180 minutes are necessary and the drilling nearly as much more. Wrist pins and other pins are usually finished inside of 30 minutes.

Other Operations

Other operations, to refer to which in detail would require too much space, include planing the center castings, guide yokes, brackets and extensions, chafing blocks, drawhead castings, driver brake fulcrums, shoes and wedges, link blocks and saddles, etc.; turning the sand box shaft, hand holes and covers, upper center castings, mud chambers, hand holes and covers, etc.; slotting the pedestal binders, equalizers, grate bearing bars, etc.; drilling a great variety of work from the plate shop and forming staybolts. In the heavier planing operations two machines furnished by the Cincinnati Planer Co. are prominent. Each has four heads, one with plain motor drive and the other with parallel drive.

The tools are electrically-driven, some being direct connected and others belted from shafting. Many have been changed from belt to motor drive. The chief feature of interest is the combination of adjustable speed operation with automatic starting control, for which motors furnished by the Reliance Electric & Engineering Co. have proven especially adaptable.

At the southwestern extremity of the plant, between the forge shop and a slip entering from the lake, there is a yard and crane runway, 234 feet long, used for the storage and handling of materials. This it will be noted from Fig. 2, forms practically an extension of one of the machine shops. The crane, which was furnished by the Northern Crane Works, Ltd., Walkerville, Ont., has a span of 47 feet, 2 inches, with 24-foot lift, and a hoisting capacity of 5 tons. It is equipped with an Electric Controller magnet. The tracks in and around the plant are also utilized for a great variety of service by a Browning locomotive crane.

The electric control of the works, except for a Lancashire variable speed planer drive, was generally installed on the Electric Controller & Mfg. Co.'s system. The overhead cranes are equipped with this company's type G and Dinkey controllers for all motions, and hoist motors are equipped with the dynamic system of braking, thus dispensing with mechanical lowering brakes. The crane switchboards afford complete circuit-breaker protection and each has a safety plug which, on locking, prevents the crane from being moved during inspection, repairs or a shut-down.

For shop tools the Electric Controller company's automatic motor starters have been provided, with field rheostats and relays for the adjustable speed machines.

Thus far only one department, the foundry, has been completely reconstructed. This, with the complete power system, pattern shop and various auxiliary details, will be described in a subsequent article.

Oliver Iron Mining Co.'s Rest Farm

A suggestion from a visiting nurse in the service of the Oliver Iron Mining Co. has resulted in the establishment of a rest home near Ishpeming for the families of the employes of this corporation.

The nurse, while making her usual rounds, found that quite a large number of the wives of the workmen tired out from the cares of their households and the rearing of children. Though they were not sick from any specific disease, in many instances they required rest, physically and mentally, if they were to be prevented from giving out entirely. Accordingly the rest home was provided. This place comprises a large dwelling house with a 12-foot porch, surrounded with ample grounds and located about 4 miles south of the city of Ishpeming. Throughout the grounds are roads and paths that make it easy for the patients at the home to walk and exercise.

The institution is under the charge of a visiting nurse employed by the mining company, whose duty it is to decide upon those who shall receive the benefits of the rest farm. A competent housekeeper is also employed who does the cooking and superintends the maintenance of the grounds and house. She also sees that all conditions surrounding the place are sanitary.

The company also provides a carriage to take the patients to and from the farm and no charge of any kind is made for any of the services rendered. During the past year the farm was open for a period of six weeks, during which time about 40 people were taken care of, each person, with the exception of one or two, spending a week at the place. About eight people can be accommodated at one time.

No particular form of entertainment is provided for the patients, as they take their sewing and reading matter with them to interest themselves. The greater part of the time is spent in the surrounding woods. Some few means of entertainment for the children are being planned.

Those who occupy the place seem to appreciate what is being done for them by the company, and while the time spent at the farm as a rule does not exceed a week, it gives them a period of rest and recreation from household duties and the cares of family life. It is contemplated that in the future the house will be open for a longer period each year, thereby affording a greater opportunity to help those who need such rest.

As stated, the patients taken into the rest house are mostly mothers of families, who, owing to their household cares and the care of their children, have become run down in health. In some instances, they are women with such debilitating diseases as pneumonia, but no chronic cases have been taken in.

The officers of the Oliver Iron Mining Co. have pushed the original idea to a most successful conclusion, and though started as an experiment, it is now being carried on as one of the institutions of the corporation, with the possibility that other homes may be established at other points. The benefit of the institution to the community as a whole as well as to the individuals concerned has been apparent.

Iron Smelting in Maryland in the 18th Century

Historical Sketches of the First Iron Works Built in That State, With a Few Sidelights on the Obstacles Encountered by the Promoters

By Henry Williams Lewis

Nearly 200 years ago practically the only manufacturing industry in the state of Maryland was that of making pig iron. At that time agricultural pursuits were engrossing the entire attention of the colonists and the manufactured articles made in the state were limited in number.

The first iron works in Maryland was probably erected in Cecil county, at the head of the Chesapeake Bay. The exact date cannot be ascertained definitely, but it is known to have been prior to 1716. The iron works first built in the colonies were simple in construction, and of necessity crude. They consisted of two units, a furnace to reduce the local ores to pig iron, and forges or bloomaries in which the pig iron was reduced to a malleable state.

As early as 1718 the reports show that Maryland and Virginia exported to England 3 tons and 7 hundred-weight of bar iron, upon which the mother country collected a duty of £6 19s 1d, or about $33.75 in our present currency, a large sum for that period.

In 1719 the records show that the General Assembly of Maryland passed an act "authorizing 100 acres of land to be laid off to anyone who owned set up furnaces and forges in the province."

This act reminds us that the Lords Proprietary offered land as a reward for anything which tended to develop or improve the conditions in the colony. First it was a bonus of 50 acres for every able-bodied man brought into the province by the land-holders already established. The wisdom of offering this encouragement is shown by the fact that in 1749, as well as in 1756, there were eight furnaces and nine forges in the province. In 1761 the records show that there were made annually about 2,500 tons of pig iron and about 600 tons of bar iron.

To return to the first furnace, which was built in Cecil county. That iron works were built at North East prior to 1716 is proved by a deed, dated that year, in which, among other things conveyed therein by Robert Dutton to Richard Bennett, are "iron works".

About the time of the passage of the act of 1719, previously mentioned, there came to Maryland from England an iron master, by the name of Jacob Farmer, on behalf of himself and others, to look into the question of utilizing the local ores for the manufacture of iron. Whether the promise of 1,000 acres of land had any bearing on this particular enterprise, does not appear. In 1722 Farmer and his associate, later known as the Principio Co., began the erection of a furnace on Talbot's Manor, in Cecil county, near the mouth of Principio creek.

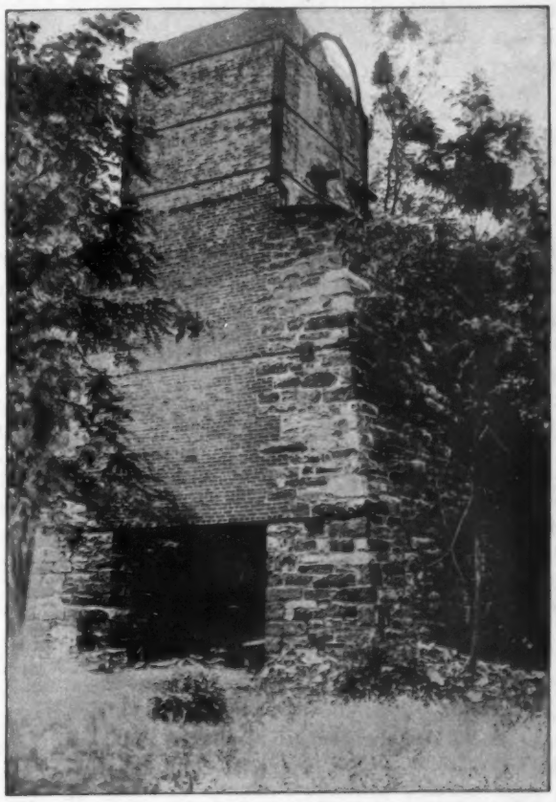


FIG. 1—TYPE OF EIGHTEENTH CENTURY BLAST FURNACE IN THE STATE OF MARYLAND

Joseph Farmer returned to England and gave glowing accounts of the prospects in Maryland, with the result that the company was enlarged and more capital secured. Among the new members of the company was John England, an iron master of Staffordshire and a member of the Society of Friends. Because of the mismanagement of the company's affairs on the part of their resident manager, one Stephen Onion, John England sailed in the spring of 1723 for America to take charge of the enterprise. It is worthy of note to mention that the trip from Bristol to Philadelphia required seven weeks and one day.

In June of that year, Mr. England wrote Mr. Farmer, reporting the conditions as he found them. As this is an interesting document, we quote from it verbatim: "When I came, I found, I think, everything contrary to my expectations on thy information; for as to ye furnace, which, according to thy information, when in London, was very near ready to blow, is but 18 inches above ye couplings, and ye inner wall is but 6 feet high.

"Neither did I think thee wouldst have been guilty of ordering a furnace to have been built until thee hadst been sure of mine (meaning ore), that which was good and enough of it for perpetuity; for I have been at Patapsco, Bush river and North East, and seen all ye mine along shore in every place, and cannot find any more than will serve for one blast, if that. And when I treated with thee I feared interest was in ye bottom, which now I find true. As to stock of both cole (coal) and mine (ore), there may be about two months' stock in both cole and mine, and when there may be a stock for a blast I cannot tell, cole lying three miles from ye furnace and stone at such a distance. You may assure yourselves here hath been and is such ruin as I never saw."

The letter went on to comment on the general worthlessness of the labor available and of the disgust at the whole condition of affairs. He further stated, however, "I concluded to stay and set up a little forge, to try ye iron if ever ye furnace runs any mettle (metal)."

That the Principio Co. had great

faith in Mr. England's ability to cope with the situation is shown by a letter from its manager to him dated at Birmingham, Sept. 25, 1723, which we again quote verbatim:

"We must tell you it is greatly to our satisfaction that we have you upon the place, in whom we can entirely depend that you will use your utmost care in regulating these disorders and in bringing those refractory workmen to better discipline. We hope mine (ore) cannot be wanting in the several rivers. Joseph Farmer says that upon tryal of the gritty mine in several places he found by the loadstone as much iron in it as there is in most of the mines that are worked in England, and hope you will experience it to be so, and yet when it is mixed with a tougher mine will make a good sort of piggs for the English market. We are pleased with your resolution to build a small forge to try piggs. Our resolution is steady for carrying on our works, for we think it would be too great a reflection upon our conduct to quit a business of this nature that we have tried fully what may be done. We give you full power in everything that relates to our concern under your care, to manage, direct and put them forward in such manner as you shall judge for the interest of the company."

In 1725 the furnace and forge had been completed, as a letter from England of that date says: "We hear you have a good stock of piggs on ye bank, therefore desire you not to fail sending us by ye first shipping what can be worked up at ye forge till ye furnace goes again, which we hope may be between 3 and 400 tons; for tho ye forge should be worked double hand, which we intend it should, it will hardly wourk up above 8 tons of piggs per week, and to have ye overplus of ye piggs lying dead will be great loss to ye company."

Other Ore Bodies

Ore was found later on the land of Augustine Washington, the father of George Washington, and on the estate of the former, the Principio company built a plant, later known as Accokeek Furnace. Following the building of this furnace on the Rappahannock river, the company built Kingsbury furnace, located at Herring Run, at the head of Back river, in Baltimore county. This was in 1744. During the period from April, 1745, to Dec. 18 of that year, this furnace made 480 tons of iron. The ore of these Maryland furnaces of the company was obtained from Gorsuch's Point, below Canton, on the eastern side of the Patapsco river, opposite Fort McHenry, and later from Whetstone Point, at the extremity of which the fort just mentioned now stands.

In 1751, we are told, the company made a purchase from Dr. Charles Carroll, of Annapolis, of the Lancashire furnace, located on the west side of Back river, a few miles northeast of Baltimore. This, with the furnace of Mr. Washington's land in Virginia, made four furnaces owned by this company, and prior to the Revolution one-half of the iron exported from America to England was made by the Principio Co.

British Property Confiscated

In 1780 the General Assembly of Maryland passed an act confiscating all British property in the state, and this formally ended the Principio Co. after 60 years' existence. The works passed into other hands and were in practically continuous operation for nearly 200 years. During the war of 1812 cannon balls and cannon were

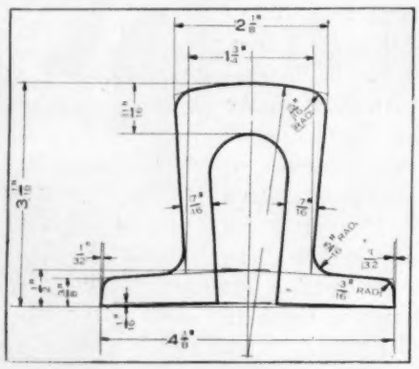


FIG. 2—CROSS-SECTION OF FIRST U-SHAPED RAIL ROLLED IN AMERICA

cast there and a fine grade of charcoal iron is still made near the site of the first furnace.

The records also show furnaces to have been built at the foot of Gwynn's falls and a forge called Mount Royal at Jones' falls, between 1723 and 1730.

Another furnace, built by Stephen Onion, who was at one time connected with the Principio Co., was located at the head of the Gunpowder river about a mile from what was then the thriving town of Joppa. The exact date of the building of this furnace is uncertain, but it was advertised for sale in 1769.

About 1760, Bush furnace was built in Harford county and Northampton furnace in Baltimore county. Other furnaces of that period near Baltimore were the Elkrun and another on Curtis creek.

In Frederick county were the Hampton furnace, Tom's creek, and Leigh furnace, whose exact location is not noted. Catoctin furnace was about 12 miles northwest of Frederick. Fredderea furnace was on the Harpers Ferry road, about three miles from Frederick.

Washington county also had several old furnaces and there was one within a short distance of Westminster, in Carroll county.

The eastern shore of Maryland seems to have had three furnaces, one in Queen Anne's county, one near Federalsburg and one in Somerset county, near Snow Hill. The latter was known as Naseongo, and is the one around which George Alfred Townsend wove a part of that charming romance, "The Entailed Hat". This furnaces used bog ores.

After the Revolution the manufacture of iron in Maryland had a rapid growth. The Avalon Iron Works were built about 1795, locating near Relay House, and were in operation until 1860. A rolling mill was built in 1810 on the Big Elk river, five miles from Elkton, and was active until about 1860.

Octoraro works, near Port Deposit, were built many years ago. The Mount Savage rolling mill was built in 1843 and in the next year it rolled the first rails in America of the U-shaped type.

Book Review

The Science of Burning Liquid Fuel, by W. N. Best; 160 pages, illustrated; published by the author, 11 Broadway, New York City, and furnished by THE IRON TRADE REVIEW for $2 post paid.

No subject has received more attention in recent years than the burning of liquid fuel, and, notwithstanding the recent advance in the price of fuel oil, the consumption continues at an unusually heavy rate. The author's experience with the burning of fuel oil covers a period of about 25 years, and encompasses the application of this fuel in many different types of furnaces. The question of burners is discussed at great length and the problem of atomization is given much consideration. In steel foundries liquid fuel is used extensively, and its application to ovens for drying molds, etc., is described and graphically illustrated. Among other furnaces in which fuel oil can be used to advantage are annealing, heat-treating and hardening furnaces of various types, air furnaces for melting malleable iron and crucible furnaces for melting brass, copper and aluminum alloys, etc.

Corporation Makes Good New Business Record

August Surpasses Any Month in a Half Year—Pig Iron Market Well Sustained—Railroads Buying More Freely

BY GEORGE SMART

The showing of the Steel Corporation of unfilled tonnage is highly encouraging, as it indicates a turn for the better has come and shows that August made the best record for new business in six months. The bookings averaged 35,000 tons daily, while shipments were about 40,000 tons. The decrease in unfilled tonnage was 175,000, as compared with 407,000 in July and 517,000 in June. Reports from some of the independents show a comfortable increase in specifications, but these reports are not uniform and some of the independents are hungry for business.

Pig Iron

The most important development in the eastern pig iron market has been the heavy buying of low grade iron. A Reading concern bought about 15,000 tons of standard forge for September-October shipment and is still in the market for 5,000 tons. Several cast iron pipe makers in the east, including the United States Cast Iron Pipe & Foundry Co., are figuring on 25,000 tons or more of low grade iron for shops in the Philadelphia district and continue to purchase liberally. Practically all Delaware iron pipe makers are in the market. The leading pipe company also is still in the market for a round tonnage for some of its western and southern plants. Reports of the Eastern Pig Iron Association for August were satisfactory, showing that unfilled orders increased about 10 per cent, while stocks had slightly declined. Quotations in the Buffalo district are firmer and a leading interest has advanced to a minimum of $14.25 for any foundry grade. The New York Air Brake Co. has closed for from 6,000 to 7,000 tons of foundry and malleable and is still figuring on 2,000 to 3,000 tons. The southern situation is stronger. As a rule, furnaces north and south are slow to quote for delivery after the first of next January, and when they do submit prices, usually ask an advance of 25 cents for the first quarter of 1914 and 50 cents for deliveries extending over the first half of the year.

Structural Material

There has been some further weakness in the price of structural material and the 1.40c quotation, Pittsburgh, is more frequently heard of on very desirable business. Tonnage coming to the eastern mills is somewhat improved. Awards of the week include the new high level bridge at Cleveland, requiring 2,600 tons of reinforcing bars and 400 tons of shapes; the new Cincinnati court house and a bridge at Portsmouth, O., which calls for 2,500 tons. The closing of contracts for cars by several leading railroads gives a better appearance to the plate market, which had shown an increasing tendency to sag. The fact that many thousand cars are demanding repairs and that there is an increasing sentiment in favor of substituting steel passenger cars for wooden indicates that heavier using of plates by railroads will soon become imperative.

Cast Iron Pipe

German makers submitted the lowest price on 90,000 tons of pipe for the water line to be built to Buenos Aires, Argentine Republic. There is, however, still some doubt as to whether the contract will be awarded. The 10,000 tons for the Queen sewer line is still unplaced.

Coke

The $2.50 price on prompt furnace coke, which for a number of weeks had resisted assaults of the buyers, has been broken by the purchase of 5,000 tons by a Cleveland firm at $2.25 for September delivery. Other sellers are offering to dispose of their furnace coke at $2.35 for prompt delivery, but many producers are still holding for $2.50. The contract price has not yet been shaded and foundry coke prices are also well maintained with several of the leading producers retired from the market.

Railroad Buying

The Pennsylvania Steel Co. has taken 7,500 tons of open-hearth rails for the Missouri, Kansas & Texas railroad, to be delivered early in the new year. The Nickel Plate has placed 5,500 tons of Bessemer rails with the Illinois Steel Co. for next year. These are the first rail orders entered for 1914. The Boston & Maine has ordered 4,500 center construction cars and 500 gondolas from the Pressed Steel Car Co., and 500 box cars from the Standard Steel Car Co. The New York Central has divided an order for 300 steel passenger cars among several manufacturers. The St. Paul has released an order for 2,500 cars, which has been pending for some time. Chilean state railways have awarded 4,500 tons of rails to the Steel Corporation, which has also taken 1,200 tons from Australian tramways.

Foreign Pig Iron

Several inquiries for pig iron are pending for foreign sources; including 500 tons of charcoal iron for Germany, 2,000 tons of foundry for Mediterranean ports and 300 tons of malleable for Japan. A small amount of pig iron has recently been imported for experimental purposes at San Francisco from India.

Pittsburgh Mills Are Still Very Busy

But New Buying in Heavy Lines is Light and Pig Iron Inquiry is Limited — Spot Coke Declines

BY C. F. WILLIAMS

Office of THE IRON TRADE REVIEW,
2148-49 Oliver Bldg.,
Pittsburgh, Sept. 9.

Despite the absence of new buying of the heavier lines, mills continue to operate at practically maximum capacity, at which rate they have been driven more than a year, during which time little or no stock has been accumulated. The actual price situation has not changed much the last three or four weeks, except that lower quotations are somewhat more general, but on the whole, finished products have succeeded in holding up very well indeed. Manufacturers are hopeful that no further reductions will occur, and leading mills, in several instances, have declined orders rather than make concessions. Consumers are conservative about covering future needs, apparently content to await developments. Spot coke is weaker.

Pig Iron.—There has been no buying of consequence, and what inquiries were before the trade a week ago have been held-up or suspended. The United States Steel Corporation, which expected to buy a round tonnage of Bessemer after figuring in the basic market, apparently has withdrawn negotiations. Basic consumers believe it obtainable at $14, valley, but dealers regard $14.25 the price. Foundry and malleable are firm, and show further signs of strength.

Ferro-Alloys.—Not enough activity has been experienced to test the price of ferro-manganese, but some believe $55, seaboard, could be shaded. Ferro-silicon remains firm.

Plates and Shapes.—Both plates and shapes are quotable at a spread from 1.40c to 1.45c, and it is not improbable an attractive tonnage of plates could be obtained at slightly less than the minimum figure. The continuation of heavy shipments has left some of the larger mills with less than six weeks' tonnage on their books. Despite predictions of a car shortage, heard since early spring, demand for car material has not developed. A leading eastern railway has 12,000 cars so badly in need of repairs they will have to be "shopped".

Sheets. — Consumers are extremely conservative about covering future needs and are buying only small tonnages. Last week's minimum prices have been shaded in several instances. Contemplated mill repairs the next fortnight will decrease production.

Rails and Track Material.—Eastern and middle-western railways are figuring 1914 rail requirements and actual negotiations have been opened in many instances. Buying is expected to begin earlier than usual because of inconvenience experienced this year through delayed deliveries. Spikes, angle bars and track bolts are quiet and prices are nominal.

Billets and Sheet Bars.—Consumers covered requirements earlier in the year and the market is quiet. Prices continue somewhat irregular, especially in reference to open-hearth sheet bars, which are being offered at concessions by some of the smaller mills. Forging billets have declined $3 a ton and are not quotable at $30, Pittsburgh. We quote sheet bars from $25.50 to $26, mill.

Hoops and Bands.—The open quotation on steel hoops continues to be 1.60c, and the bulk of the tonnage is being sold at that figure. An attractive tonnage could be obtained at $2 less than the general price. Bands are firm at 1.40c.

Iron and Steel Bars.—Reductions in the price of structural material failed to affect steel bars, which are firmly held at 1.40c. Iron bars are not particularly strong at 1.60c, although some makers are asking 1.65c. Some irregularity features the shafting market, although 62 per cent off is the lowest quotation offered by larger makers.

Muck Bar.—Leading makers refuse to sign the $7-a-ton scale asked by United Sons of Vulcan, but no great scarcity is experienced despite the fact that plants have been idle since July 1.

Bolts, Nuts and Rivets.—No change in the situation is noted, although some makers report that conditions are somewhat stronger. Specifications are fairly heavy and some mills are well protected with contracts.

Iron and Steel Pipe.—Demand for lap weld material continues heavy, and butt weld pipe is more active than a week ago. Some mills have enough tonnage booked to operate at maximum capacity until the end of the year. An inquiry for 20 miles of 8-inch steel pipe is before the trade.

Boiler Tubes.—Mills are well protected with contracts placed earlier in the year. Seamless tubing is active and discounts are reported firmly held.

Tin Plate.—Interest is taken in the market for next year's delivery, but information regarding prices will not be obtainable until early October, as it is not probable any activity will develop until that time.

Wire.—Continued buying by some of the heaviest consumers leads manufacturers in this district to believe wire products stronger than reports of a week ago indicated. Specifications have been liberal and mill stocks have been reduced in several instances. Leading makers are holding nails at 1.65c and plain wire at 1.45c.

Wire Rods.—The last sale of wire rods was on the basis of $27.50, Pittsburgh. We quote from $27.50 to $28, Pittsburgh.

Coke.—Spot furnace coke has sold at $2.25 to a Cleveland firm. The price situation appears more elastic. Operators controlling the bulk of the standard fuel, however, are refusing to shade the general price, and have sold additional contract coke this week. The Connellsville *Courier* says production was 403,030 tons the week ending Aug. 30, an increase over the week before of about 33,000 tons.

Old Material.—Turnings and borings, considered the weakest items on the list, have reflected slight strength, but other grades are unchanged. Middlemen do not expect to see improvement until finished lines are more active.

Make Plans for Tube Plant

Preliminary plans are being made by Samuel Diescher & Sons, Pittsburgh, engineers, for the erection of the Standard Seamless Tube Co.'s new plant near Economy, Pa. Ground will be broken within a fortnight. The Fownes interests, Pittsburgh, have filed a deed with the recorder of Beaver county for a site of 55 acres, recently acquired in Harmony township, near the site of the American Bridge Co.'s works at Ambridge, and application for a charter has been made. The Reliance Coke Co., controlled by the Fownes interests, has practically completed the erection of its coal and coke plant near Denbo, Pa., where the company has 600 acres of coking coal land. The coke plant consists of 250 rectangular ovens. Work on the mine shaft has been completed.

Some Western Mills Need Business

To Insure Continued Operation, But Mills Are Still Busy on Old Orders—Fair Activity in Pig Iron

BY H. COLE ESTEP

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1521-23 Lytton Bldg.,
Chicago, Sept. 9.

In spite of a continuation of slow business, specifications are being received in sufficient volume to keep the mills operating at their full capacity. This is one of the remarkable features of the present situation and until mill operations become less active, it is difficult to see how there can be any very drastic reductions in the prices of finished materials. The western steel makers still have from three to five months' business ahead. On the other hand, it is evident that some of the smaller producers in the central west, who do not as a rule make long term contracts covering their output, are hungry for business. The weakness which is evident in plates and sheets is due to the condition of these concerns. In the Chicago territory, quotations on iron bars and old material are lower; in other respects prices are being fairly well maintained.

Pig Iron.—The past week has been characterized by fairly liberal sales made very quietly. A Davenport, Ia., steel foundry has purchased about 2,000 tons of northern basic at a price said to be equivalent to $15.00, Chicago furnace. Some scattering sales of malleable have also been made recently. Charcoal iron is again showing pronounced weakness and offers equivalent to $14.75, Chicago, have been made. The inquiry for southern iron is a little more active, and the market is firm at $11.00, Birmingham, for this year. There has been some business placed for first quarter and first half shipment, although in most cases buyers are not yet ready to take up their next year's requirements. For shipment during the first three months of 1914, the southern furnaces are generally asking $11.25, Birmingham, with a 25-cent advance for contracts extending over the entire first half.

Merchant Bars.—The weakness in the price of bar iron is more pronounced and sales have been made at 1.35c, Chicago. Specifications are still characterized by a lack of railroad business, but are said to be holding their own, and there is some evidence of an early increase in railroad activity. The fact that some of the large steel bar contracts which were placed last month involved material concessions from the established price of 1.40c, Pittsburgh, is becoming more generally known, but this has practically no effect on the present situation because it is realized by most buyers that concessions are usually made to the implement trade on account of the nature of their contracts. New business is light and specifications are fair. Up to the present time, the price of steel bars has shown no signs of breaking. Shafting is fairly steady.

Plates and Structurals.—The lower quotations on plates are becoming more open and there is no doubt that sales of sheared plates have been made rather freely at 1.58c, Chicago. Most of this business was placed with the smaller mills in southern Ohio and western Pennsylvania. The leading interest and the larger independents are maintaining the full price except where it has been necessary to meet competition in order to hold a customer. In such instances, even the largest producers have done business at 1.40c, Pittsburgh. The Inland Steel Co. will put a new plate mill in operation late this month. There has been a slight revival in the car market and some encouraging plate specifications have been received recently by local makers. The price of structurals is firm at 1.63c, Chicago. The weakness which is evident in plates has not yet extended to shapes.

Rails and Track Fastenings.—The market for standard rails in the west continues stagnant, although there is hope that there will be some activity later this month. Inquiries and orders for track fastenings are fairly satisfactory and bolts are a little firmer. The situation surrounding this light rail market is unchanged and most of the makers are actively meeting the competition of the rerolling mills.

Bolts, Nuts and Rivets.—The Chicago market on rivets is controlled entirely by local conditions at present, without reference to the prices quoted at any eastern basing point. The nominal quotations for structural rivets are 2.03c, Chicago, but it would not be difficult for a shrewd purchaser to shade this figure $1 a ton. The automobile manufacturers are prominent in the bolt and nut situation and were it not for their business, conditions would be exceedingly dull.

Sheets.—Quotations on galvanized sheets are absolutely unresponsive to the continued advances in spelter. This would seem to show that the price situation is more precarious than surface conditions would indicate. Nevertheless the mills are operating practically at their full capacity and although orders are given reluctantly, their aggregate is sufficient to keep everyone busy. There is no evidence that 3.20c, Pittsburgh, equivalent to 3.38c, Chicago, has been shaded on No. 28 galvanized sheets.

Wire Products.—Reports of prices under 1.45c, Pittsburgh, for plain wire and 1.65c for wire nails cannot be confirmed in this territory. It is known that some of the leading dependents have made fairly liberal sales within the past week at current prices. If the shading were at all general, it is doubtful whether this could be done. Orders show no decrease and the manufacturers believe that September will be a considerably better month than August.

Cast Iron Pipe.—The pipe foundries in the south and west are taking very little business at the present time. The leading interest has been awarded 800 tons of 48-inch pipe at Akron, O., and also 300 tons at Minneapolis. Winnipeg, Man., is in the market for 1,100 tons of water pipe on which bids will close Sept. 19. No award has yet been made on the small tonnage pending at Springfield, O. Routine prices are fairly regular, but liberal concessions would be made on large orders.

Merchant Pipe and Tubes.—The usual amount of early fall pipe business is being received for refitting apartment houses, but in general the warehouse trade is quiet. The mills report fairly good orders and manufacturers' discounts are being well maintained. Specifying against tube contracts continues heavy and further orders have been booked recently.

Old Material.—Scrap prices are failing to hold and in certain lines the weakness is specially pronounced. Rerolling rails, No. 1 wrought, No. 1 busheling and machine shop turnings are particularly soft. These items declined an average of 25 cents a ton during the past week. It is believed that all the tonnage called for by some of the heavy railroad offerings placed on the market recently has not been absorbed. The Santa Fe is again adding to its scrap holdings; in fact, this system has not yet succeeded in very materially reducing the unusual large amount of old material which it has on hand. General trade conditions do not point to an early change in the trend of scrap prices.

Heavy Buying of Low Grade Iron

In Philadelphia District—August Reports to Eastern Pig Iron Association Favorable

BY C. J. STARK

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611 Bulletin Bldg.,
Philadelphia, Sept. 9.

Strong statistical conditions in pig iron in eastern Pennsylvania have been fortified by heavy buying and negotations the past week for low grade iron which has absorbed largely the stocks of this character. August reports to the Eastern Pig Iron Association made prior to this movement were very favorable, unfilled orders having increased 10 per cent, while stocks further declined. The eastern pig iron market continues more promising. Finished steel conditions remain only moderately active though inquiry and new bookings are slightly better. Some of the largest eastern plants are running about 75 per cent full. The offering of plates and shapes at 1.40c, Pittsburgh, seems to be increasing. Certain scrap grades show some gains and the market acts stronger.

Pig Iron.—A sharp buying movement in standard forge among eastern Pennsylvania rolling mills has been chief among the market's developments. Including the heavier tonnages, sought by the cast iron pipe makers in this district, from 40,000 to 50,000 tons of low grade metal has been involved, a considerable part of which remains in negotiation. The Reading Iron Co., having blown out its Emaus furnace, entered the market and took about 15,000 tons of mill forge for September-October delivery from several makers, paying from $14.75 to a shade below $15, delivered. This buyer is figuring on about 5,000 tons additional. Another iron mill is inquiring for 5,000 tons of forge and a third for 2,500 tons for this year. In pipe iron, one maker took 3,000 to 4,000 tons of northern grades, partially at $15, delivered. Several pipe shops in this district, including the United States Cast Iron Pipe & Foundry Co., are now figuring for round lots aggregating 20,000 tons or more. As the result of the heavy buying, practically all the low grade iron on eastern furnace books, which has not been large, has been absorbed and a shortage in the grade is indicated. One maker now has advanced standard forge to $15.25, delivered. Foundry iron prices gradually are being elevated under fair buying. While as low as $15.75 to $15.85, Philadelphia, and as high as $16.25 are being done, the average No. 2X market is well represented by about $16, delivered. A large Lehigh valley maker has advanced to $15.25 and $15.50, furnace. Lebanon valley makers quote $15 to $15.25 for first quarter, but other furnaces are slow to commit themselves on next year. The Crane furnace is about to go out. In basic several thousand tons additional for this year have been obtained by one buyer at $15, delivered. In the case of one maker participating, the price nets the furnace 25 cents more than the recent large sale reported at this figure. A Harrisburgh buyer still negotiates for 2,000 to 3,000 tons, the General Electric Co. took 1,000 tons of 0.038 phosphorus iron from a Lebanon maker at $17.50, furnace, and this price has been made by other makers of low phosphorus iron in that district, but the latter are now quoting higher. Standard low phosphorus remains $23 to $23.50, Philadelphia, with small sales prevailing.

Coke. — Reports of standard Connellsville furnace coke for prompt shipment being offered below $2.50, ovens, to eastern buyers continue to be heard, though no additional purchases are learned. It is understood that the prompt Connellsville coke reported in recent purchases in the east at $2.30, ovens, is guaranteed as strictly standard. Contract coke is very firm at $2.50, ovens.

Iron and Steel Bars.—Better specifications against steel bar contracts are generally reported. Makers have been extending to Jan. 1, some contracts expiring Oct. 1, at 1.40c, Pittsburgh. Strictly new business is small. One middle western mill now offers some sizes in two to three weeks and other sizes in three to four weeks. Bar iron remains weak at 1.25c to 1.35c, mill. Bookings are slow.

Plates. — The 1.40c, Pittsburgh, or 1.55c, Philadelphia, price on plates is shown in more numerous instances. These cases are still the exception rather than the rule, however, and are usually made upon the most attractive orders or where special competitive conditions prevail. The open market remains 1.45c, Pittsburgh, at which most of the moderate sized tonnage of the current market is being taken. Eastern makers have quoted 1.40c, Pittsburgh, in some cases, and some of the larger as well as the smaller mills in the Pittsburgh and nearby districts have also done so.

A lot of 500 tons went to one of the larger Ohio mills upon this basis. One eastern maker last week booked about 35 per cent over its full capacity, but this is much better than other mills are doing. Eastern ship yards still figure on work requiring 5,000 tons or more. The Brooke iron mill at Birdsboro is resuming for rolling skelp principally.

Structural Shapes.—Reports are more freely in circulation in this district that one of the larger makers in Pittsburgh territory has made 1.40c, Pittsburgh, or 1.55c, Philadelphia, in a few cases. Eastern makers are getting a fair amount of miscellaneous tonnage at 1.45c, Pittsburgh, but one or two of them will shade at least $1 on an attractive tonnage. One large eastern maker declares it is still maintaining the full price. Tonnage is a little better, some mills booking as much as 80 per cent of capacity.

Sheets.—Sufficient new business, especially in the heavier gages, is coming to eastern sheet makers to keep operations well balanced. Forward buying is small. Quick delivery is usually sought. Prices are firm.

Semi-Finished Material. — More inquiry is reported by one eastern billet maker, but new bookings are light. Prices show more spread. A large buyer could probably do $25, mill, on rolling billets, though $25.75 to $26 is the usual price. A sale of 500 tons of slabs at $25, mill, is reported. Southern makers are sometimes disturbing factors in this market.

Old Material.—August railroad lists, which largely went direct to consumers, indicate higher intrinsic values in scrap. The open market, however, while somewhat better in tone, lacks sizable transactions to establish this fact. On the heavy melting steel, the railroads obtained more than $12.10, delivered, and on the No. 1 railroad wrought more than $15, delivered. One large buyer will pay $12, delivered, on a tonnage of steel, but other mills are not offering over $11.50, delivered. The Bethlehem Steel Co. has been a buyer of borings, taking about 5,000 tons at $8.25, delivered. The largest buyers offer but $13 on heavy cast.

J. L. Replogle, vice president and general sales manager, the Cambria Steel Co., Johnstown, Pa., has returned from an extended automobile trip through the east.

The Western Implement Co., Sioux City, Ia., has been forced into bankruptcy by Detroit and Cincinnati banks, which hold its notes.

Cleveland Buyer Shades Coke Price

Getting Five Thousand Tons at $2.25—Furnaces Not Anxious to Quote on Pig Iron for Next Year

BY GEORGE SMART

Office of THE IRON TRADE REVIEW,
Penton Bldg.,
Cleveland, Sept. 9.

Iron Ore.—Ore shippers are having difficulty in keeping contract tonnage busy and they will probably be late in cleaning up this fall. Dispatch is slow and stages of water are gradually falling. The trade has really not recovered fully from the double holiday, and altogether September is having a very bad start. Ships have been bunched at both ends of the route, and owing to the surplus of tonnage thus created, grain is being carried at a very low rate. This condition, however, is not expected to last and vessel owners are looking forward to an active fall movement in grain. Wild carriers can expect nothing, however, from the ore trade during the remainder of the season, as contract vessels will be abundantly able to take care of it.

Coal is coming forward more freely to Lake Erie docks, though vessel tonnage is ample. Large carriers are waiting for cargoes rather than go to the head of the lakes light.

Pig Iron.—The sounding of the markets by different buyers during the past few days has disclosed considerable unwillingness on the part of both northern and southern furnace operators to quote for delivery after Jan. 1, but the furnaces which have quoted ask 25 cents over current prices for delivery through the first quarter and 50 cents additional if the deliveries extend through the first half of next year. On the inquiry of the Massillon Iron & Steel Co. for 7,500 tons for first half delivery, some furnaces declined to quote. No orders were placed, and it is believed that the inquiry was sent out as a feeler merely. Steel making pig iron is very quiet. The only transaction of consequence reported is a purchase of 2,000 tons by the United Steel Co., of Canton, which, it is understood, was obtained from a lake furnace at $13.75, furnace.

Coke.—The most important development in the coke market for a long time was the purchase of 5,000 tons of standard furnace coke by a Cleveland firm for September delivery, at $2.25, ovens, which is 25 cents below the $2.50 price which had been firmly adhered to for a number of weeks. The coke market, for early delivery, has developed considerable weakness, and some sellers are offering to sell at $2.35. Others are still adhering to the $2.50 quotation. Several of the leading makers of foundry coke have passed from the market and $3 seems to be the minimum for either prompt delivery or contracts.

Finished Material.—Developments have not been numerous or highly significant, but nearly all the indications point to slightly improved conditions. While there has been keen competition on plates, some sales are still being made at 1.45c, Pittsburgh. Eastern mills are able to do a fair amount of plate business. Wire nails at $1.65 price seems to be well maintained. Blue annealed sheets can be had at 1.60c and galvanized No. 28 at 3.15c. In fact, these are the usual quotations at present. Structural shops are busy. It is not expected that the Hunkin-Conkey Construction Co., which has been awarded the contract for the Superior-Detroit high-level bridge, will contract for the 2,600 tons of reinforcing bars and 400 tons of shapes in the near future as the contractor has 600 working days to complete the job. It is probable that, owing to alterations now being discussed, a longer period will elapse before the completion of the new structure. Plans for the new Union depot have been approved by the mayor and other city officials, but the steel requirements have not been figured. The depot will cost $17,000,000, and will be an important feature of Cleveland's group of public buildings. Some independent mills are approaching the end of their orders for important finished materials and are very anxious to take on new business.

Old Materials.—The scrap market continues to display a waiting tendency, dealers generally holding out for higher prices, although mills are willing to pay the prices now asked. A few sales of old steel rails, over 6 feet in length, have been made lately on a $13.50 basis. The upturn in prices which has been looked for during the past two months has not made its appearance, but sentiment has improved with the betterment in other markets.

A. Rotter & Co., Cleveland, dealers in iron, steel, relaying rails and new light rails, have discontinued their yard at 1962 Scranton road, and hereafter will transact a direct shipment business at 658 Leader-News building, Cleveland.

BETTER SALES

In the St. Louis Market—Inquiry is Very Light.

BY E. C. ERWIN

Office of THE IRON TRADE REVIEW,
St. Louis, Sept. 9.

Pig Iron.—Although the inquiry for pig iron in the St. Louis market practically is nil today, sales Friday, Saturday and this morning were better than have been recorded for a long time. Sales today were 2,000 tons of northern basic, 500 tons of coke car wheel iron, 600 tons of northern basic, 800 tons of northern foundry and 500 tons of southern foundry. Sales Friday and Saturday, nearly all of which was southern iron, were: 1,000 tons, 500 tons, 300 tons, 200 tons, 125 tons, 100 tons, 250 tons and a number of small orders. Southern No. 2 is quoted at $11 for this year, $11.25 for first quarter of 1914, and $11.50 for first half. Some furnaces are refusing to make a price beyond the year, believing that conditions will improve.

Coke.—The demand for coke shipments on contracts is good, and prices are inclined to stiffen. There is very little new business being transacted.

Old Material.—The market is quiet for scrap iron, with many dealers waiting to see the outcome of the tariff. The rolling mills and steel mills, however, are asking for foundry and steel grades. Lists are out today as follows: Missouri Pacific, 700 tons, closing Thursday; Frisco, 600 tons, closing Tuesday; Chicago & Alton, 500 tons, closing Wednesday, and a local brake company for 200 tons, closing Wednesday.

Cobalt as an Alloy

The experiments which have been made at Pittsburgh with the use of cobalt as an alloy for steel are attracting interest. The results are said to be quite satisfactory, and at least one company is planning to put a special new steel alloy with cobalt on the market soon. This alloy is said to be suitable for tool steel and to stand tests better than any material now offered for this purpose.

Southern Strength Seen at Cincinnati

Furnaces Not Anxious to Quote for Next Year's Delivery —Sheet Mill Enjoys Good Business—Coke is Strong

BY S. G. BACKMAN

Office of THE IRON TRADE REVIEW,
503 Mercantile Library Bldg.,
Cincinnati, Sept. 9.

Pig Iron.—The southern situation is slowly but gradually becoming stronger and a general advance in prices will probably be realized before long unless something unlooked for happens. A few furnaces in Alabama have already notified the market of an advance of from $11 to $11.50, Birmingham basis, for southern No. 2 foundry iron for last half shipment, but mostly because they are fairly sold up for the time being. The others are still holding at $11, Birmingham basis, for this same delivery. While none of the furnaces are apparently anxious to quote into the first half of next year, a few of them will accept business for this delivery at $11.50, Birmingham, but others are holding at $12, Birmingham, for first quarter shipment, and will not accept any business for the second quarter.

The southern Ohio situation is unchanged at $14, Ironton, for No. 2 foundry iron for the last half, but this price is fairly firm. Inquiries throughout the general market are rather few for either southern or southern Ohio iron and usually for small tonnages. The inquiries from the Platt Iron Works, Dayton, O., for 2,500 tons divided between northern and southern grades and from the Globe Stove Co., Kokomo, Ind., for 5,000 tons, also divided between northern and southern iron, are still unclosed. Transactions are as a rule rather light, but the general feeling appears to be a little better throughout.

The Globe furnace has recently advanced its price on 8 per cent silicon iron from $17 to $17.50, furnace, but others will still sell at the former figure.

Coke.—Reports from surrounding territories that prices have been shaded in several instances have had no effect upon the market here, which has shown no indication of declining during the past week. On the other hand, prices are very strong, and a leading Wise county interest has advanced its quotations on furnace coke to $3, and on foundry coke to $3.25, both per ton, ovens. The labor situation is still very acute, but may be relieved somewhat by the present cooler weather, which may make it possible to secure more workmen around the ovens, of which there has been a decided shortage during the recent hot weather. In the Pocahontas and New River fields, production is being kept down by the fact that coal is selling at such high prices and is in such good demand that the operators are consequently not anxious to turn it into coke, and are doing so only when necessary.

Finished Material.—The local sheet mill is doing an unusually heavy business for this season of the year. Sales during the past week have increased at least 40 per cent over those of the week previous and specifications on old contracts are heavy. This can be accounted for to a certain extent from the fact that jobbers and dealers are realizing better business following the recent lull in July and August, and are anxious to close for fall requirements. Prices are unchanged at 3.30c for galvanized sheets No. 28 gage and 2.25c for black sheets, No. 28 gage, both Pittsburgh basis.

Warehouse business is somewhat better following the recent settlement of the teamsters' strike. The situation has been entirely cleared up and warehouses are making deliveries as usual. Several of the larger local houses, it now appears, were not handicapped to any extent on account of the strike, as shipments were made by railroads to all accessible points and several teams were kept in operation at the same time. There are rumors that the prices generally quoted can be shaded in certain instances by some of the smaller warehouses, but the general level is probably unchanged. The demand seems to be about equally distributed among the articles carried in stock, but concrete reinforcing bars and steel piling have been selling fairly well recently.

Old Material.—The improvement that was supposed to have followed as a natural consequence the settlement of the iron molders' and teamsters' strikes in this city, has not appeared as yet and indications are that there will not be much of a change for several weeks. There is a better feeling among the dealers, principally because all labor troubles have practically been settled. Transactions are very light and few. No. 1 machine cast and stove plate have probably been the best sellers during the past week, the former at from $9.50 to $10 and the latter at from $6.75 to $7.25, both per net ton, dealers' yards. Prices have not changed but are very uncertain as a general rule, because nothing has transpired recently upon which a change could be based.

OBITUARIES

William Key, for 20 years foundry superintendent of the Link Belt Co., Chicago, died at his home Aug. 28, after an illness of six weeks.

Abram Green, president of the Lake Superior Iron & Metal Co., Hancock, Mich., died Aug. 30, in Detroit, aged 59. Mr. Green has been connected with the Lake Superior company for the past 25 years.

Captain James Reid, Sarnia, Ont., widely known from one end of the lakes to the other as a "wrecker", died Sept. 3 as the result of a general breakdown. His career was a notable one. Practically no wreck recovery has occurred on the great lakes in the past 30 years in which he was not a figure.

Gustaf R. Smirling, for many years superintendent of the steel foundry of the General Electric Co., at Lynn, Mass., died Aug. 31, at his home in Swampscott, Mass., after an illness of more than seven years from paralysis. Mr. Smirling was born in Stockholm, Sweden, in 1851, coming to this country in 1888.

Frederick William Neidringhaus, one of the founders of the National Enameling & Stamping Co., St. Louis, died from the effects of the heat, at Granite City, Ill., Aug. 29, aged 81 years. He was born in Westphalia, Germany, and came to this country in 1854, living in St. Louis until 1893, when he went to Granite City to look after real estate interests of the family.

Clement W. Hooven, 47 years old, died at a sanitarium in Battle Creek, Mich., Aug. 29. He had been ill for several months. Mr. Hooven's home was at Anderson, Ind., where he was identified with many interests. He founded the Anderson Tool Co., which later moved to Hamilton, O., but he continued to hold his interests in the company. The body was taken to Anderson for burial. A widow survives.

George A. Mason, assistant general manager of sales and head of the wire department, the Jones & Laughlin Steel Co., Pittsburgh, has returned from a vacation in Europe.

Hurrying Shipments of Alabama Iron

Upon Request of Melters—Sales for the Week Make a Small Aggregate—Some Offers Declined

BY W. B. NEAL

Office of THE IRON TRADE REVIEW,
Birmingham, Ala., Sept. 9.

Pig Iron.—The volume of business transacted during the past week was not as large as the week previous. However, contract solicitations for iron wanted for delivery during the first half of the year 1914 totaled several thousand tons. These offers came from old line customers; and however much the producers might have desired to accommodate these buyers, offers were declined. Nothing has transpired to suggest to the producers the advisability of opening their books for next year. Order books show tonnages booked for delivery through the fourth quarter of this year; and this fact is largely responsible for the present "lull" in the market. Both buyer and seller are covered for the year. During the week, one of the large producers of the district has advanced its price to $11.50 per ton, for No. 2 foundry, Birmingham. The actual tonnage booked during the past week, in round numbers, aggregated 8,000. Some of this tonnage was sold for shipment in comparatively small lots to cover spot needs, and for consumption in southern territory. The bulk of the tonnage, however, was in lots of 250 to 500 tons for last quarter delivery. Another of the large producers states that the entire tonnage from three of its furnaces was sold, together with additional tonnage from the yard, during the week. Iron is being moved from the yard, and from the block with due rapidity consistent with the car supply and labor at the furnaces. These are both controlling factors during the hot summer months with reference to the iron loaded for shipment. In summing up the situation for the week, the most encouraging feature is the number of requests received by producers to anticipate certain shipments. All interests approached state emphatically that minimum price of $11 per ton, No. 2 foundry basis, Birmingham, is being maintained for shipment during the balance of the present year.

Cast Iron Pipe.—In the cast iron pipe market, there has been only a repetition of the previous week's lull. Manufacturers say that the orders in hand consist of only small bookings being worked up. The currency agitation has served practically to close the door against municipalities floating their bonds for improvements. Concessions have been made in prices, but such action has not resulted in any substantial business.

Old Material.—The local scrap market has not shown as much activity during the week as was apparent the week previous, but the undertone is good, inquiries are more numerous and sales are being made daily. Some dealers are stocking heavy, looking forward to better prices.

BUFFALO PIG IRON

Shows Advancing Tendency, But Sales Are Not Heavy.

BY FRANK R. DOLBEE

Office of THE IRON TRADE REVIEW,
Buffalo, Sept. 9.

Pig Iron.—With a placement of upwards of 12,000 tons and a moderate inquiry to be satisfied on nearby requirements, the market has become firmer and prices have stiffened, bringing a return of $15 iron, as the maximum for No. 1 foundry. A leading company quotes as follows: On all silicon over 2 per cent, $14.50; on all silicon below 2 per cent, $14.25; malleable, $14.50. The demand back of this improvement is not on iron for delivery into the next year, but for early and urgent use. The melters need iron now, but are hesitating about booking their future needs. Concessions are not being made by the furnaces and the new schedules are being firmly held. The bulk of the placement is made up of small lots going to consumers in this state and the Canadian territory. The lessening of the differential between charcoal iron and the coke irons has caused an increased interest in the former among melters who can use it. Both the surface conditions and the undertone of the whole market situation are considered quite favorable by the producers.

Finished Material.—A firm and improved market is reported by all the mills and agencies of the district, with prices remaining unchanged. A lively lot of miscellaneous inquiry has developed because scattered consumers have held off to a point where they are now practically without stocks, some to the extent that they have been forced to cut short operations. They are now making urgent appeals to the mills to rush forward deliveries. Fortunately the latter situation has improved. On the other hand, the better deliveries have caused some consumers, who placed practically duplicate orders on account of the long congestion of the mills, to call upon the producers for suspensions on some of their material under contract. The fact that suspensions have been asked instead of cancellations in adjusting their requirements to the new mill situation, is one of the indications of the strength of the market. It seems that the consumers who have overbought to gain deliveries feel they will need all the material they have ordered instead of only part of it. It also shows they are satisfied with the price situation. The situation is said to be considerably better than it was in July.

Old Material.—There is not enough activity accurately to gage the schedules quoted on most of the lines. The only trading apparent is in cast iron borings and heavy axle turnings. The absence of the principal interest from the market on heavy melting has caused a sag to $10.50 to $11, from $11 to $11.50. There is also a softening in car wheels to $12.50 to $13, from $13 to $13.50. The improvement in the pig iron market has not reached the scrap yards.

Developing Heavy-Oil Engine

Under a provision in the last naval appropriation bill that not to exceed $250,000 might be used for development of a type of heavy-oil engine for one of the fuel ships authorized in 1912, the bureau of steam engineering is continuing arrangements for constructing such an engine, which will be installed for experimental purposes in the Maumee. The designs are being acquired abroad by representatives of the navy department, now in Europe, and they will be for what is known as the Nuremburg type of Diesel engine, two of which, each of 2,500 horsepower, will be built.

Bids will be called for by the navy department for furnishing the material for the engines, and construction will be at the New York navy yard by the regular force in the steam engineering shops. About a year will be taken to complete them.

Naval authorities fear the cost in connection with the use of fuel oil in internal-combustion engines and under boilers of the four battleships now building or designed for oil, if prices continue to advance.

New York Pig Prices Tending Upward

But Changes Are Slow—Air Brake Company Buys Round Tonnage — Better Tone of Plate Market

BY C. J. STARK

Office of THE IRON TRADE REVIEW,
1115 West Street Bldg.,
New York, Sept. 9.

Iron Ore.—The dull condition of the eastern ore market, which has continued for months, has not been broken. The first cargo of 3,000 tons of Texas ore consigned to the Alan Wood Iron & Steel Co. finally reached Philadelphia last week.

Pig Iron.—The buying of pig iron in the aggregate remains satisfactory to sellers and the market shows a sustained, though slow movement toward higher prices. More tonnage has been taken and is being asked for shipment after Jan. 1. These cases have usually shown about 25 cents advance over last quarter, but a number of the furnaces still refrain from quoting so far ahead. The New York Air Brake Co. closed for 6,000 to 7,000 tons of No. 1, 2 plain, 3 and off malleable for last quarters and first quarter delivery at Watertown, N. Y., and is still figuring on 2,000 to 3,000 tons. It obtained the No. 1 grade at considerably less than $16, delivered, equivalent to $14, or less, Buffalo, basis and the under grades at lower prices. Rochester district makers with freight advantages are understood to have divided the order with Buffalo furnaces. A Jersey buyer took 500 tons of first quarter No. 2X from an eastern Pennsylvania maker at about $16, delivered, or 25 cents advance for the seller. The Farrell Foundry & Machine Co., Ansonia, Conn., bought 2,000 tons of 3 per cent iron for shipment to March from a Buffalo maker. Another lot of 2,000 tons of foundry was taken. A stove maker asks 2,500 tons of southern iron for last half. The Crane Valve Co., Bridgeport, asks 500 tons of early malleable. Some Buffalo makers are stronger, asking $14.25, as minimum, for any grade this year. A leading Lehigh Valley maker has advanced to $15.25 and $15.50, furnace, for No. 2X. Lebanon Valley No. 2 is quoted $15 to $15.25, furnace.

Ferro-Alloys.—Trade still waits with interest the final action upon the duty on ferro-manganese. In the meantime, buying continues to be restricted to 100-ton or less lots. A Jersey buyer is asking 100 tons. Advices from abroad state that the opinion is held in well-informed circles that the bottom of the decline in manganese has about been reached. There is less evidence of prices below $56, seaboard.

Plates. — The closing by the New York Central and the Boston & Maine railroads against their recent inquiries has given a little better tone to the car market. Inquiry for equipment seems a little quicker and one industrial company, which has been considering several thousand cars, is reviving this matter. Some larger car orders are expected to come out shortly. The Atlantic Coast Line is taking bids on one or two large car ferries requiring 2,000 tons each, largely plates. New business in plates is not heavy and is made up of lots from many sources. Prices show greater tendency toward softness and instances are more numerous of 1.40c, Pittsburgh, equivalent to 1.56c, New York, being made in the eastern Pennsylvania and the Pittsburgh districts.

Structural Material.—New business going to the structural mills from this district is a little larger in a miscellaneous way, but the tonnage is still much below plant capacities. In the metropolitan district, the new work going to the fabricating shops is light. Financial conditions are still the deterrent factor in new undertakings. Buyers no longer have trouble to take deliveries as they desire them, particularly from eastern mills, which are now operating at about 75 per cent of capacity. Prices show an easier tone. Makers usually are able to obtain 1.45c, Pittsburgh, on the ordinary run of the market, but on the most attractive business, shading of $1 or more continues to be done.

Cast Iron Pipe. — Official advices have been received that German makers submitted the lowest prices on the approximately 90,000 tons of pipe and specials for the large Buenos Ayres, Argentine, waterline, bids for which opened Aug. 29. These shops bid $33 per gross ton, delivered, on the pipe, and $51, delivered, on the specials, which is considerably below what American makers would have offered, had they submitted bids. There is still some doubt that the contract will be awarded on this bidding. The large tonnage comprises 22,000 tons of 30-inch, 8,000 tons of 60-inch and 60,000 tons of miscellaneous pipe and specials. The 10,000 tons of segments for the Queens sewer line is still unplaced, as L. A. Burke & Sons Co., the low bidders on the general contract, have not yet received the award. Bids go in Sept. 12 on a contractor's letting for Brooklyn, involving 2,000 tons of 12 to 20-inch pipe. The market remains quiet. One large maker, well filled on small pipe, is now quoting $24, shop, or about $25.50, New York, for 6 to 8-inch, but other foundries will do less, and on the heavier sizes the irregularity is more pronounced.

Iron and Steel Bars.—Good specifications against steel bar contracts are not up to operations with some makers and deliveries now range from three to eight weeks, according to size. The largest makers report cancellations and suspensions are surprisingly few under the present quiet conditions of the market. New business is small. Prices are firm. Bar iron is still subject to irregularity and prices are weak, ranging from 1.25c to 1.35c, mill.

Coke.—Some sellers ascribe the lower prices on spot furnace coke reported in eastern districts to inferior grades, but this view is not shared in by some of the purchasers. It is indicated, however, that most reliable brands still are held on the $2.50 basis. The New Jersey Zinc Co. is reported to have bought 6,000 tons for September at this price. A New Jersey smelting interest asks 10,000 tons of furnace coke for a year's shipment.

Old Material.—A deadlock condition in the scrap market is manifest. Buyers still decline to make offers at which the dealers are able to obtain tonnages, and the market awaits a turn to higher bidding or lower asking prices. The tone inclines towards improvements. There is a better demand for borings, the Bethlehem Steel Co. having been buying at $8.25, delivered.

Inquiries From Foreign Melters

New York, Sept. 9.—Inquiries from foreign melters of pig iron have been more numerous in this market during the past few days. An interesting feature in connection with this demand is the inquiry for 800 tons of charcoal iron for shipment to Germany. This country is not usually a buyer of pig iron on this side of the Atlantic. A lot of 2,000 tons of foundry iron is offered for shipment to the Mediterranean district and a Japanese melter wants 300 tons of malleable. Some smaller inquiries for Chile and other countries are pending.

The Hammond Machine & Forge Works, Indianapolis, has filed notice that it has decreased its capitalization from $25,000 to $9,000.

GREATER DEPOSITS

Than Generally Known Are Found in the Wyoming Iron District.

The operations of The Colorado Fuel & Iron Co. at Hartville, Wyom., in recent years have demonstrated that the iron deposits of the Hartville area are much more extensive than originally predicted by the scientists and engineers who made the earlier examinations, and that the district is as a whole a much more important prospective reserve for iron ore supply than is generally known outside.

This company secured extensive holdings in the district about 12 years ago by purchase and has carried on extensive development explorations. Since that time, upwards of 6,000,000 tons of ore has been extracted from the mine, and it is now reported unofficially that the reserves on this company's property alone will aggregate 40,000,000 tons.

This ore is upwards of 60 per cent in iron and mostly of Bessemer grade. The ore extends to more than 600 feet in depth and the bodies are large. The company is operating two mines extensively, the Sunrise and the Chicago. Two railroads are built into the district, one The Colorado & Wyoming, a subsidiary of The Colorado Fuel & Iron Co., and the other a branch of The Burlington road.

The company is now shipping to its Pueblo plant between 750,000 and 1,000,000 tons of ore annually.

This company is the only operator in the district at the present time, and all of its output goes to Pueblo. C. A. Guernsey, who owned the original properties which were purchased by this company, is the owner of other tracts in the district on which iron ore has been developed extensively by recent explorations. These outside deposits are now open under option to an eastern syndicate and have recently been investigated by engineers.

METAL MARKETS

New York

Sept. 9.

Copper.—The leading producers and selling agencies withdrew from the market yesterday in order to give buyers an opportunity to digest the report of the Copper Producers' Association before transacting any further business. This morning quotations were nominally as follows: Electrolytic, 16.75c; lake, 17c, and casting, 16.50c; and these prices were generally adhered to when these interests resumed activity later in the day. There is every prospect, however, of an advance in the next day or two. The situation is very strong and there is a strong demand here, in large lots, through November. Spot and October are scarce and what is to be had is entirely controlled by the two leading sellers. The demand from abroad is large but some interests report that they are beginning to note a slight falling off from this source.

Standard closed dull and weak on the New York metal exchange today at 15.50c bid and 16.37½c asked, for spot. In London the market was weak, and spot standard closed at £73 5s, and three months at the same figure. Exports so far this month are 9,243 tons.

The report of the Copper Producers' Association for August showed a production of 131,632,362 pounds; deliveries into domestic consumption, 73,649,801 pounds; exports, 73,263,469 pounds, and stock on hand, as of Sept. 1, 38,314,270 pounds. Despite the fact that stocks on Sept. 1 were thus about 15 million pounds smaller than on Aug. 1, leading sellers say there is no danger of a "copper famine".

Tin.—The demand for this metal has eased off a bit owing to the fact that tin plate mills are finishing up on their contracts with can makers. The demand in general, however, is keeping up well. Despite reports of a scarcity of the metal, stocks are adequate to the needs of consumers. Today's London close was £194 for spot and £192 15s for three months, which is a decline of £1 10s from last week for spot. The New York market was steady, 42.40c being bid and 42.75c asked, for spot. Tin afloat to this country is 2,595 tons.

Lead.—There is not much demand for this metal. The American Smelting & Refining Co.'s price for 50-ton lots, New York delivery, is 4.75c.

Spelter.—The demand for spelter is light but the price is firm at 5.95c to 6.00c, New York, for prime western brands.

Antimony.—This metal is dull but firm. Quotations are: Cookson's, 8.40c to 8.50c; Hallett's, 7.75c to 8.00c; other brands, 7.25c to 7.50c.

Chicago

Sept. 9.

New Metals.—The large plate makers in this district are interested in the continued strength shown by the spelter market. It is claimed that this is due to the prices on ore rather than to the demands of consumers. Copper is also very strong and further advances are noted. As a remote possibility 20-cent copper is being considered.

We quote dealers' selling prices f. o. b. Chicago as follows:

Lake copper, carload lots, 16½c, casting, 16⅜; smaller lots, ¼c to ¾c higher. Spelter, car lots, 5.85c; lead, desilverized, 4.75c; sheet zinc, $8.00, f. o. b. La Salle, in car lots of 600-pound casks; pig tin, 44c; Cookson's antimony, 8⅝c; other grades, 7½c.

Old Metals.—Copper and brass are firmer, aluminum is also strong and the general sentiment in the old metal market is somewhat better. Buying seems to be on a slightly more liberal scale.

We quote dealers' selling prices f. o. b. Chicago as follows:

Copper wire, crucible shapes, 13°c; copper bottoms, 12¼c; heavy red brass, 12½c; heavy yellow brass, 8½c; No. 1 red brass borings, 11c; No. 1 yellow brass borings, 7¾c; brass clippings, 10c; lead pipe, 4½c; zinc scrap, 4⅝c; tea lead, 4c; No. 1 aluminum, 17c; No. 1 pewter, 28c; block tin pipe, 36½c; tin foil, 33c; linotype dross, 3¼c; electrotype dross, 3¼c; stereotype plates, 4⅜c; stereotype dross, 3¼c.

REVIVAL EXPECTED

In British Pig Iron, But Improvement Has Not Come.

Office of THE IRON TRADE REVIEW,
Prince's Chambers, Corporation St.,
Birmingham, Eng., Sept. 1.

Pig Iron.—Most works are now getting into full swing after the holidays, but though a revival of business is confidently expected, practically no improvement is in many departments observable. Pig iron buying continues to be on a tentative scale, and though the tone generally is a little better, there have been one or two slight downward movements. The restoration of confidence on the continent proceeds very slowly, and it is now generally felt that it will take the Balkan states a considerable time to regain a position in which they can be counted upon as an important factor in trade calculations. Prices of Cleveland pig iron have varied a little during the week. Wednesday's market showed more animation than has been customary recently, but though the transactions were numerous, there were none of them of noticeable magnitude. Stocks of pig iron in public stores have slightly increased, but are still very small as compared with last year's. The closing prices this week for Cleveland No. 3 were 5s 11d ($12.65) for cash, and 56s 3d for one month. Hematite pig continues to show weakness and further reductions are expected. Merchants' offers to sell mixed numbers at 69s ($16.90) for early or forward delivery meet with little success.

Finished Material.—A steady autumn trade is expected in all classes of raw and semi-raw material, and specifications are now coming in with greater regularity. In the Midlands, common iron bars from Belgium are coming in at quite $5 less than local makers' prices, though the quantity imported is not so large as one might expect in the circumstances. In the steel trade, the keenest competition exists in semi products and for finished descriptions the trade is quiet. In spite of recent reductions in prices, buyers are still lying low, hoping for further concessions. These, however, are not likely to come while manufacturers are still engaged upon old contracts. The plate section on account of ship-building demands is at present the busiest department of the steel trade.

Quotations for all kinds of finished material remain as last week.

Loss in Pig Iron Output Smaller in August

Blast Furnace Production Shows Decrease of 21,000 Tons Last Month — Merchant Stacks Show Greater Decline

A gradual recession in the production of coke and anthracite pig iron is shown by August statistics. The output last month was 2,537,018 tons, compared with 2,558,275 tons in July, a loss of only 21,257 tons. Since the high mark was passed in May, the monthly losses in June and July had been 200,000 tons and 58,000 tons, respectively.

The average daily production showed a loss last month of 686 tons, the average for August being 81,839 tons against 82,525 tons in July.

The loss in output was largely the result of decreased activity of the merchant furnaces. The output of merchant iron in August was 659,363 tons, against 675,833 tons in July, a loss of 16,520 tons. The steel works or non-merchant furnaces produced 1,856,975 tons in August, compared with 1,859,177 tons in July, a loss of only 2,202 tons.

There was a net loss of four in the number of active stacks, comparing the last days of July and August. The number in blast on Aug. 31 was 260; on July 31, 264. The merchant furnaces showed a loss of three, six being blown out and three blown in.

Seven steel works furnaces were blown out while six were put in blast, a net loss of one.

Ferro production in August was 10,944 tons, against 10,848 tons in July, a gain of 96 tons. The output of spiegel in August was 9,736 tons, in July, 12,367 tons, a loss of 2,631 tons.

The merchant furnaces blown in during August were: One Detroit, Detroit Iron & Steel Co.; Colonial, Colonial Iron Co., and Perry, Perry Iron Co.

Merchant stacks blown out were: One Ashland, Ashland Iron & Mining Co.; Lawrence, Marting Iron & Steel Co.; one Warwick, Eastern Steel Co.; Topton, Empire Steel & Iron Co.; one Low Moor, Low Moor Iron Co., and one Bay View, Illinois Steel Co.

Steel works furnaces blown in were: One Ohio, one Lucy and one New Castle, Carnegie Steel Co.; one Eliza, Jones & Laughlin Steel Co., and the two new stacks of the Pittsburgh Steel Co.

Steel works furnaces blown out were: South Works No. 5, Illinois Steel Co.; one Central, American Steel & Wire Co.; one Columbus, one Duquesne and one Isabella, Carnegie Steel Co.; one Cambria, Cambria Steel Co.; one Swede, Alan Wood Iron & Steel Co.

MONTHLY PRODUCTION.

	1913.	1912.	1911.
January	2,787,800	2 052,806	1,766,658
February	2,578,670	2,098,796	1,781,285
March	2,762 823	2,411,529	2,165,764
April	2.754,353	2,377,621	2,044,904
May	2,816,825	2,503,341	1,871,388
June	2,616,883	2,433,737	1,773,282
July	2,558,275	2,402,567	1,776,108
August	2,537,018	2,500,163	1,921,832
September		2,444,454	1,973,918
October		2,683,645	2,092,061
November		2 639,562	1,999,100
December		2,777,292	2,032,301
Totals	21,412,647	29,325,513	23,198 601

AVERAGE DAILY PRODUCTION.

	1913.	1912.	1911.
January	89,929	66,220	56,989
February	92,095	72.372	63,617
March	89,123	77,791	69,863
April	91,812	79,254	68,163
May	90,865	80,753	60,367
June	87,229	81,125	59,109
July	82,525	77,502	57,294
August	81,839	80,650	61,995
September		81,482	65,797
October		86,569	67,486
November		87,985	66,637
December		89,590	65,558

AUGUST PIG IRON

States.	No. of stacks.	No. in blast last day of month. Aug.	July.	Total tonnage made. Merchant.	Non-Merchant.	Totals— Aug.	July.
Pennsylvania	159	106	105	174,808	851,929	1,026,737	1,031,916
Ohio	72	60	62	192.966	435,601	628,567	616,694
Alabama	45	21	21	97,686	65,580	163,266	160,564
Virginia	22	6	7	25.488	.....	25,488	25,959
New York	27	18	18	74,710	107,587	182,297	177,372
New Jersey	7	2	2	10,981	.....	10,981	10,922
Illinois	26	18	19	25,281	202,114	227,395	246,710
Colorado	6	3	3				
Indiana	10	9	9				
Maryland	4	3	3				
Wisconsin	6	2	3	13,544	171,343	184,887	201.134
Kentucky	7	2	3				
West Virginia	4	3	3				
Tennessee	18	3	3				
Washington	1	0	0	22,656	22,821	45,477	46,588
Georgia	2	0	0				
Texas	3	0	0				
Minnesota	1	1	1				
Michigan	3	3	2				
Missouri	1	0	0	21,243	.....	21,243	17,201
Spiegel—All states...						9,736	12,367
Ferro—All states....						10,944	10,848
Totals	424	260	264	659,363	1,856,975	2,537,018	2,558,275

Returned to Stockholders

The executive management of the Mitchell-Lewis Motor Co., Racine, Wis., capital $10,000,000, has been returned to the original stockholders by the banking interests which in November, 1911, refinanced the company with a loan of $2,500,000. The representatives of the bankers have stepped out of the management and at a meeting of the directors last week arranged the affairs for a period of not less than five years, whereby the former officers and directors, save one, resume their places in the general management. Beach L. McLaren was elected president; John W. Bate, first vice president and general factory manager; William T. Lewis, second vice president; H. Emmett Redman, secretary, and Frank L. Mitchell, treasurer. President McLaren until the election was president of the Racine Rubber Co., and formerly an official of the United States Tire Co. Mr. Bate has been factory manager and designer since the inception of the Mitchell-Lewis company, retiring on Feb. 1, 1913, at which time Joseph M. Winterbotham Jr., representing the bankers, was elected president. The company is now enjoying the most prosperous condition in years and is employing more men than at any time in the past. It manufactures pleasure cars and plans a production of between 6,000 and 7,500 for the 1914 season.

The Eveland Engineering & Mfg. Co., Philadelphia, has sold its entire production of electric riveters for a year for approximately $1,500,000. The Eveland company is installing new machinery and will make transformers, electric tempering and hardening machines.

SAFETY DINNER

Will Have Gary as Toastmaster—Program of the Congress.

A tentative program of the Second Safety Congress of the National Council of Industrial Safety, to be held at the Hotel McAlpin, New York City, Sept. 22, 23, 24 and 25, in connection with the Association of Iron and Steel Electrical Engineers, has been issued. Committee meetings will occupy the Monday afternoon session. An educational session will be held on the morning of Sept. 23 at 10 o'clock, with Arthur Williams, of the American Museum of Safety, as presiding officer. Dr. Wm. H. Tolman, director of the American Museum of Safety, will address the meeting on "The Plans of the American Museum of Safety", F. C. Schwedtman on "The 1915 Congress", and Robt. G. Bremer, on the "National Safety Museum". The discussion will be given by C. B. Connelley, Carnegie Technical Schools; Alvin E. Pope, Panama Exposition Committee; Frederick L. Hoffman, Prudential Life Insurance Co., and Wm. H. Doolittle, National Metal Trades Association. A safety men's round table, arranged by C. W. Price, will be conducted. The afternoon session with Chas. E. Meek, of New York, presiding, will be devoted to Fire Prevention. The address will be "Fire Waste", by Robert D. Kohn, president of the National Fire Protection Association; "Fire Hazards", by Joseph Johnson, Fire Commissioner, New York City; "Fire Drill and Fire Protection", by Lewis T. Bryant, Commissioner of Labor, New Jersey. The discussion will be participated in by W. Newell, Mechanical Engineer, Department Factory Inspection, New York; Fanklin Webster, Editor *Safety Engineering;* John H. Walker, civil engineer, Pennsylvania Department, Labor and Industry, and Powell Evans, Philadelphia Fire Prevention Commission. In the evening there will be an inspection of the American Museum of Safety at 29 West Thirty-ninth street, New York City.

W. B. Wilson, Secretary of Labor, will preside at the morning session of Sept. 24. Dr. C. P. Neill and Dr. John Price Jackson will present addresses.

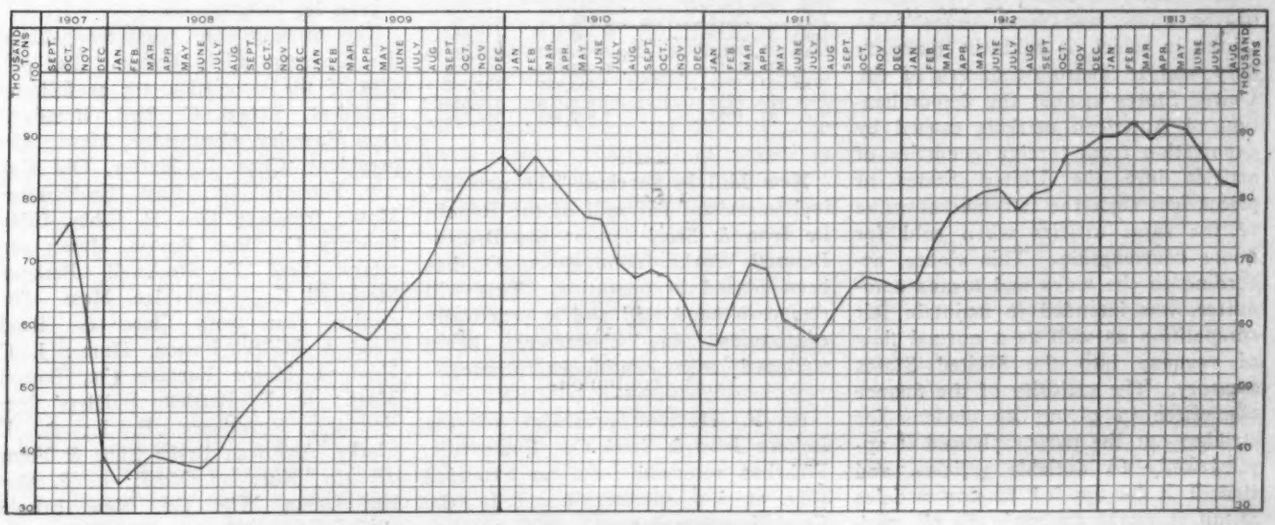
John B. Andrews, of the American Association for Labor Legislation; Jasper Y. Brinton, Pennsylvania Child Labor Association; Frederick L. Hoffman, Prudential Life Insurance Co., and David L. Beyer, Massachusetts Employes' Insurance Association, will discuss the subject. James T. McCleary, Secretary of the American Iron and Steel Institute, will preside at the afternoon session. Division reports will be given on Federal Bureaus by Dr. Lucien W. Cheney, Bureau of Labor; State Bureaus, by C. W. Price, Industrial Commission of Wisconsin; Manufacturers' Associations, by M. W. Mix, President Dodge Mfg. Co., Mishawaka, Ind.; Transportation, by R. C. Richards, Chicago & Northwestern Railroad; Mines, by Dr. Joseph A. Holmes, Bureau of Mines; and on Iron and Steel, by L. H. Burnett, Carnegie Steel Co. Chas. M. Schwab, George Westinghouse, Daniel Willard, president of the Baltimore & Ohio railroad; Leonard Hatch, of the Bureau of Labor, New York, and C. C. McChord, of the Interstate Commerce Commission, will present discussions.

The Safety dinner, which will be held in connection with the Association of Iron and Steel Electrical Engineers, will be given Wednesday evening. Judge E. H. Gary will act as toastmaster, and R. W. Campbell and C. W. Parkhurst will be the chairmen. President Woodrow Wilson is programed to deliver a toast on "Peace"; W. B. Wilson, Secretary of Labor, upon "Labor", and John K. Tener, Governor of Pennsylvania, upon "Industry". Mayor Wm. J. Gaynor, of New York, will present a toast of welcome. The final business of the convention will be conducted on Thursday morning.

Will Seek Panama Trade

A business conference will be held in Philadelphia Nov. 20, with a view to educating iron and steel merchants and manufacturers of machinery as to the commercial possibilities of the Panama canal.

Most of the Pennsylvania iron and steel men and Edward Randolph Wood, of the Philadelphia board of trade, are aggressively organizing the proposed conference. As it has assumed such great commercial importance it will probably be given under the name of the board of trade. Speakers of international fame, familiar with the commercial possibilities of the Panama canal, will be invited to address the conference. The iron and steel and machine manufacturing industries of Delaware, Maryland and New Jersey will be asked to send delegations, and the trade interests of Pennsylvania will have an opportunity to learn just how the opening of the Panama canal will affect their business and precisely what can be done or must be done to make the Delaware river front one of the famous shipping centers of the world. The entire industry will be directly concerned in this conference, because it is directly in line with the comprehensive plans inaugurated by Alba B. Johnson, president of the Baldwin Locomotive Works, during the trade merger campaign earlier in the year.



AVERAGE DAILY PRODUCTION OF COKE AND ANTHRACITE PIG IRON

ANTI-DUMPING CLAUSE

Strongly Advocated in a Speech by Senator Penrose.

Washington, Sept. 9.—Strong reasons were advanced by Senator Penrose in a speech in the senate last Saturday on the tariff bill for the adoption of an anti-dumping amendment, which he offered last month. He adverted to the unusual procedure which made it necessary for him to introduce the amendment by saying a similar clause was carried in the pending bill as it passed the house, but that it had been eliminated by the majority of the senate finance committee. It was a statutory provision, he said, relating to imported goods sold or consigned to the United States at prices lower than at the prices at which such goods were sold for home consumption. It imposed upon such goods in addition to the regular duty, a special or dumping duty, equal to the difference between the special export price and the fair market price for home consumption. It extended only to dutiable goods, provided that in no case should it exceed 15 per centum ad valorem, and did not apply at all to goods on which the regular duty equaled 50 per cent. The amendment proposed by Senator Penrose, apart from some verbal changes, differs from the provision which came to the senate in the important feature that its scope was extended so that it applies to free goods as well as to dutiable goods. The majority of the finance committee was of the opinion that if it applied to any articles at all it should apply to those that are free of duty as well as to articles that are dutiable, an opinion in which Senator Penrose concurred.

The proposed amendment was voted down by the senate.

The senator referred to the report of the house ways and means committee in which it said the dumping duty was to guard producers of the United States against the demoralization of American markets caused by exportation from foreign countries of articles into the United States at prices less than the fair market value of the same articles when sold for home consumption. This clause, according to the ways and means committee, was intended to maintain fair competition as well as a normal flow of revenue into the United States treasury. The majority of the finance committee in giving its reasons for striking out the paragraph said it applied only to dutiable articles, and that if it be applied to any articles at all it ought to apply to all, and, secondly, if it did not apply to all, it was capable, under an unfriendly administration, of being used as a means of increasing the duty upon dutiable articles 15 per cent, and of putting articles upon the free list under a duty of 15 per cent. The committee then pointed out that the provisions contained in the existing law with regard to undervaluations and the increasing tax because of it up to 70 per cent is a very good anti-dumping provision. Regarding the matter of "an unfriendly administration," Senator Penrose said conniving administrations will arrange their own fiscal and economic policies.

BEST RECORD

Made in Six Months in New Business by Corporation.

New York, Sept. 10. (By wire.)—The best record in new business in six months was made by the United States Steel Corporation in August, as shown by the monthly statement issued today. The bookings in August averaged 35,000 tons daily and shipments were about 40,000, netting a loss in unfilled tonnage of 175,000 tons. This is the smallest loss since February. Reports from some of the largest finished material makers show a comfortable increase in specifications, some gain in miscellaneous new business and better general tone.

The American Steel & Wire Co. reports the best August in several years.

Unfilled tonnages have been as follows:

Date.	Total tonnage.	Gain or loss.
Aug. 31, 1913	5,223,468	175,888—
July 31, 1913	5,399,356	407,961—
June 30, 1913	5,807,317	517,005—
May 31, 1913	6,324,322	654,440—
Apr. 30, 1913	6,978,762	490,194—
Mar. 31, 1913	7,468,956	187,758—
Feb. 28, 1913	7,656,714	170,654—
Jan. 31, 1913	7,827,368	104,796—

New Mill in Service.—The new 20-inch merchant bar mill of the Republic Iron & Steel Co. at the Brown-Bonnell Works, Youngstown, O., has been placed in operation. This will replace a hand mill and is practically continuous in character, being equipped with continuous furnace.

A. F. Huston, president of the Lukens Iron & Steel Co., Coatesville, Pa., has returned from an extended stay at his summer home in the Catskill mountains.

CLAM BAKE

Planned by New England Foundrymen—Years' Program Issued.

An outing of the members of the New England Foundrymen's Association, will be held at Riverside Grove, on the Connecticut river near Springfield, Mass., on Wednesday afternoon, Sept. 17. The entertainment on this occasion will consist of a big clam bake. A special steamer has been chartered to convey the party down the river to and from Springfield. The special committee on arrangements consists of Charles L. Newcomb, of Holyoke; L. S. Brown, of Springfield; H. E. Witherbee, North Adams, and Geo. H. Cushing, Westfield.

The official calendar of the association for the year's meetings has been issued. This shows the speakers and subjects to be presented on the following dates:

Oct. 8, 1913, "Grinding Conditions in the Foundry," by Carl F. Dietz, of the Norton Co., Worcester, Mass. Illustrated.

Nov. 12, 1913, "Savings Bank Life Insurance," by H. W. Kimball, secretary Massachusetts Savings Insurance League.

Dec. 10, 1913, "Co-operation Among Foundries," by Dr. Richard Moldenke.

Jan. 14, annual meeting.

Feb. 11, 1914, "Sand Blast Equipment & Foundry Appliances," by A. G. Warren, of the J. W. Paxson Co., Philadelphia. Illustrated.

Mar. 11, 1914, "Accurate Cost Control for the Foundry," by E. W. Riker, of McCall & Clarke, New York City.

Apr. 8, 1914, "Auto Trucks," by Day Baker, of the General Vehicle Co. Illustrated.

May 13, 1914, out of town meeting. Subject and place to be announced later.

June 10, 1914, smoker.

The meetings are regularly held at the Exchange Club, Boston. The officers of the association are as follows: President, Robert C. Bird, Broadway Iron Foundry, Cambridge, Mass.; vice president, Chas. L. Nutter, Old Colony Foundry Co., East Bridgewater, Mass.; treasurer, Geo. H. Gibby, Gibby Foundry Co., East Boston, Mass.; secretary, Fred F. Stockwell, Barbour, Stockwell Co., Cambridge, Mass. Executive committee: Chas. A. Reed, Reed & Miller, Boston, Mass.; J. C. Hosford, Magee Furnace Co., Boston, Mass.; D. K. Bartlett, Builders' Iron Foundry, Providence, R. I.; A. L. Clarke, American Brake Shoe & Foundry Co., Norwood, Mass.; A. F. Corbin, Union Mfg. Co., New Britain, Conn.

COURT HOUSE CONTRACT

Included Among Awards of the Week —Cleveland Bridge Let.

New York, Sept. 10. (By wire.)—The United States Steel Products Co. has taken 4,500 tons for a large department store at Buenos Aires for Harrods, Ltd., London. The American Bridge Co. has 1,100 tons additional for rebuilding the Arcade building, Philadelphia. The leading interest estimates 220,000 tons in prospective work.

New awards in structural steel for bridge and building work are still backward in the eastern districts. The small orders predominate and inquiries are not very numerous. Financial conditions are still checking activity in certain branches of work in the metropolitan district.

The contract for the construction of the new Hamilton county court house at Cincinnati, to cost $2,500,000, was signed on Sept. 4 by the new courthouse building commission, and the architects who are to have charge of the work, Rankin, Kellogg & Crane, of Philadelphia. The contract allows the architects 6 per cent of the total cost of the work. It will require about 12 months to prepare the plans, specifications and estimates and to award the contracts. The building will probably be of granite or marble, with a framework of steel, and is to be fireproof throughout.

Fabricators in the Pittsburgh district have not taken much new tonnage this week. The Mount Vernon Bridge Co., Columbus, O., is low bidder on a four-span steel highway bridge at Portsmouth, O., involving about 2,500 tons.

The opening of the fall season finds the fabricators of the Buffalo district all active, with contracts on hand and pending, and work soon to come out that is still on the boards. Bids will be taken this week on the six buildings for the Union Carbide Co.'s Canadian plant, at Welland, Ont., taking from 1,200 to 1,500 tons; also for the Palace theater, Buffalo, taking 400 tons.

The fabricators in the Chicago district are gradually absorbing the heavy stocks of plain material which they have been holding. This has been made possible by the fact that although no very large orders have been booked recently, there has been a steady flow of small contracts ranging from 200 to 700 tons each.

STRUCTURAL AWARDS.

The Penn Central Power & Transmission Co., Williamsport, Pa., has awarded Samuel F. Shoemaker & Co., Pittsburgh, 350 tons of steel for plant at Williamsport. Day & Zimmerman, Philadelphia, are the engineers.

Starr & Larson Co. apartment building, San Francisco, Cal., 250 tons to the Central Iron Works.

Y. W. C. A. building, Oakland, Cal., 500 tons, to the Pacific Rolling Mill Co.

City of Chicago, bridge over Little Calumet river, Indiana avenue, 258 tons to the Chicago Bridge & Iron Co.

Superior-Detroit high level bridge, Cleveland, 2,600 tons of steel reinforcing bars and 400 tons of shapes, to the Hunkin-Conkey Construction Co. at $1,028,571.

Theater at Eighty-first street and Broadway, New York City, for the Fulton Construction Co., 500 tons, awarded to the Harris-Silvers-Baker Co.

Foundry building, Hubbard & Co., Pittsburgh, 400 tons, Jones & Laughlin Steel Co.

Boiler house for the Allis-Chalmers Co., Milwaukee, 800 tons, placed with the American Bridge Co.

Mechanical laboratory for Johns Hopkins University, Baltimore, 600 tons, placed with Phoenix Bridge Co.

CONTRACTS PENDING.

Four span steel bridge, Portsmouth, O., 2,500 tons. Mount Vernon Bridge Co., low bidder.

Clinton Genessee Hotel, Syracuse, N. Y., estimated to require 2,000 to 3,000 tons. Preliminary bids being taken.

Post office New Haven, Conn., 900 tons, E. M. Waldron & Co., Newark, N. J., low bidders.

Three highway bridges for city of Baltimore. About 750 tons. Inquiry issued.

CAR BUYING

Shows More Activity—First Order for Rails for Next Year.

New York, Sept. 10. (By wire.)—The New York Central has placed 600 to 800 additional for terminal areas in this city. The Boston & Albany inquires for 1,000 tons for bridge work.

An order for 7,500 tons of open-hearth rails partially for delivery this year and for the early months of 1914, just placed with the Pennsylvania Steel Co. by the Missouri, Kansas & Texas railway, represents the first rail business to be reported for next year's shipment. A large tonnage of rails for 1914 delivery remains in the preparatory stage and makers believe this will begin to come out liberally about next month. Western rail makers estimate the rail requirements for 1914 now in sight there at about 350,000 tons. Some fair orders for export and miscellaneous lots for domestic roads are being placed. Car buying has been a little heavier and as the order books of builders are running down, buyers show more interest in the probability of their obtaining more attractive prices. The Boston & Maine railroad in the week distributed 1,000 cars and 4,500 center constructions, and the New York Central Lines placed about 300 steel passenger cars. The Atlantic Coast Line is inquiring for one or two large car ferries, requiring about 2,000 tons of steel each. Bridge work is rather small.

In the Chicago district, there is growing evidence that the railroads will place a much larger volume of business in September than they have during the two previous months. While there have been no heavy awards so far this month, enough scattering orders have been received for bridge material to indicate a somewhat easier financial outlook.

CAR AND LOCOMOTIVE ORDERS.

Boston & Maine, 500 gondolas and 4,500 center constructions to Pressed Steel Car Co. and 500 box cars to Standard Steel Car Co.

The New York Central has divided orders among different builders against recent inquiries, for about 300 steel coaches of various types.

The San Antonio, Uvalde & Gulf railroad has ordered two consolidation freight locomotives and two 10-wheel locomotives from the American Locomotive Co.

The Philadelphia & Reading Railroad will build ten large freight locomotives in its own shops.

The Pennsylvania Railroad is planning the building of 45 locomotives in its own shops.

The Chicago, Burlington & Quincy is planning the purchase of a number of Pacific and Santa Fe type locomotives.

The International & Great Northern has purchased three oil burning consolidation locomotives from the American Locomotive Co.

The Chicago, Milwaukee & St. Paul Ry. Co. has released an order for 2,500 cars which had been pending with a leading maker for some time.

The Grand Rapids & Indiana has ordered 60 steel gondola cars from the Cambria Steel Co. and 85 flat cars from the Pressed Steel Car Co.

RAIL ORDERS AND INQUIRIES.

The Southern Pacific Railroad, 1,500 tons of frictionless rails, with the Tennessee, Coal, Iron & Railroad Co.

Manila Railways, Manila, P. I., 5,000 tons, placed with the Lackawanna Steel Co.

Chilean State Railways, 4,500 tons, placed with the United States Steel Products Co.

Adelaide Tramways, Australia, 1,300 tons, placed with the United States Steel Products Co.

The Missouri, Kansas & Texas railroad, 7,500 tons of open-hearth rails for delivery this year and first quarter, placed with the Pennsylvania Steel Co.

The Nickel Plate railroad is figuring on 7,000 tons of rails for its requirements after Jan. 1.

BRIDGE AND STRUCTURAL WORK.

Highway bridge, Manchester, N. H., 1,500 tons, awarded to the American Bridge Co.

It is understood that the Cincinnati, Hamilton & Dayton has ordered 10,000 tons of bridge material from the American Bridge Co. for flood reconstruction.

Northern Pacific Ry. Co., bridge work, 3,960 tons to the American Bridge Co.

Canal Contract.—The contract for section three of the new Welland Ship Canal has been let to the firm of O'Brien & Doheny, of Montreal. The contract price is $9,540,050. Section three is the most difficult in the plan of the new canal.

IRON AND STEEL PRICES

Pig Iron

PITTSBURGH

(Through This Year.)

Bessemer	$16.65
Basic	15.15
No. 2 foundry	14.90
Malleable	14.90
Gray forge	14.40

The freight rate from valley points is 90c.

CLEVELAND

(Through this Year Delivered in City).

No. 1 foundry	$15.00 to 15.50
No. 2 foundry	14.75 to 15.00
No. 2 southern	15.10 to 15.35
Bessemer	16.65
Silveries 8 per cent silicon	20.05

CINCINNATI

(Third and Fourth Quarters.)

Southern foundry No. 1	$14.75
Southern foundry No. 2	14.25
Southern foundry No. 3	13.75
Southern foundry No. 4	13.50
Southern gray forge	13.25 to 13.50
Mottled	13.25
Southern No. 1 soft	14.75
Southern No. 2 soft	14.25
Standard southern car wheel	27.25 to 27.75
Southern Ohio No. 2	15.20 to 15.70
Southern Ohio No. 3	14.70 to 15.20
Southern Ohio No. 4	14.45 to 14.95
Silveries 8 per cent silicon	18.20 to 18.70

(Freight from Ironton, $1.20; from Birmingham, $3.25.)

CHICAGO

(Delivered Chicago, this year, except northern foundry and malleable Bessemer, which are quoted f. o. b. local furnace.)

Lake Superior char., No. 1 to 4	$15.00
Northern foundry No. 2	15.00
Southern foundry No. 2	15.35
Jackson co. silveries, 8 per cent	19.40
South'n silveries, 5 per cent sil.	17.35
Alabama basic	15.35
Malleable	15.00

PHILADELPHIA

(Prompt and third quarter shipment delivered to consumer's plants, in Philadelphia and vicinity, unless otherwise specified.)

Northern No. 1X foundry	$16.25 to 16.50
Northern No. 2X foundry	15.75 to 16.25
Northern No. 2 plain	15.50 to 15.75
Standard forge (Eastern Pa.)	14.75 to 15.00
Virginia No. 2X	15.80 to 16.05
Southern No. 2	15.00 to 15.50
Standard low phos., Phila.	23.00 to 23.50
Lebanon low phos., furnace	17.50 to 18.00
Malleable	16.25 to 16.50
Basic (Eastern and Central Pa.)	15.00 to 15.25

NEW YORK

(Prompt and third quarter delivery, prices based at Jersey City and tidewater.)

Northern No. 1X foundry	$16.25 to 16.50
Northern No. 2X foundry	15.75 to 16.25
Northern No. 2 plain	15.25 to 15.75
Virginia No. 2X	16.10 to 16.35
Southern No. 2	15.25 to 15.75
Malleable	15.75 to 16.00
Gray forge	14.75 to 15.00

ST. LOUIS

(Throughout This Year.)

Southern No. 1	$15.25
Southern No. 2	14.75
Southern No. 3	14.25
Southern No. 4	13.75

(Freight, Birmingham to St. Louis, $3.75.)

BIRMINGHAM

(For southern delivery.)

No. 1 foundry	$11.50 to 12.00
No. 2 foundry	11.00 to 11.50
No. 3 foundry	10.75 to 11.00
No. 4 foundry	10.25
Gray forge	10.25
Mottled	10.25
Standard basic	11.50
Off basic	11.00
Charcoal	25.00

BUFFALO

(Through this year, delivered in city).

No. 1 foundry	$14.75 to 15.00
No. 2X foundry	14.25 to 14.75
No. 2 plain	14.00 to 14.25
No. 3 foundry	14.00
Gray forge	13.75 to 14.00
Malleable	14.50 to 14.75
Basic	14.50 to 14.75
Charcoal	15.75 to 16.75
Charcoal (special brands)	17.00 to 20.00

Ferro Alloys

English and German 80 per cent ferro-manganese, prompt and forward delivery, $55 to $56 seaboard.

Fifty per cent ferro-silicon on contracts, $75, Pittsburgh, or Philadelphia, for carloads; $74 for larger lots and $73 for 600 tons or more. Twelve to 13 per cent, $26. Eleven to 12 per cent, $25. Ten to 11 per cent, $24. Nine to 10 per cent, $23 f. o. b. Globe, Jisco and Ashland furnace. Freight to Pittsburgh, $1.90.

Ferro-carbon titanium 8 cents per pound for carload lots; 10 cents per pound for 2,000-pound lots and over; 12½ cents per pound in lots up to 2,000 pounds.

Freight rates on ferro-manganese, foreign spiegeleisen and electrolytic ferro-silicon from Baltimore to Pittsburgh, $2.16; to Youngstown, $2.48; to Cleveland, $2.57; to Detroit and Columbus, $2.99; to Cincinnati, $3.40; to Chicago and Milwaukee, $4.00. Freights from Philadelphia and New York, 10 to 30 cents higher, respectively.

Freight Rates, Finished Material

From Pittsburgh, carloads, per 100 pounds, to:—

New York	16 cents
Philadelphia	15 cents
Boston	18 cents
Buffalo	11 cents
Cleveland	10 cents
Cincinnati	15 cents
Chicago	18 cents
Denver	84½ cents
St. Louis	22½ cents
New Orleans	30 cents
Birmingham	45 cents
Pacific coast, shapes and plates	80 cents

Coke

AT THE OVENS.

	Prompt shipment.	Contract.
Connellsville district:		
Foundry coke	$2.85 to 3.10	$3.00 to 3.25
Furnace coke	2.25 to 2.50	2.50
Wise county district:—		
Foundry coke	$2.75 to 3.25	$2.75 to 3.25
Furnace coke	2.25 to 3.00	2.35 to 3.00
Pocahontas district:—		
Foundry coke	3.00	3.00
Furnace coke	2.60 to 2.75	2.60 to 2.75
New River district:—		
Foundry coke	$3.25 to 3.50	$3.25 to 3.50
Furnace coke	2.60 to 2.75	2.60 to 2.90

Iron Ore

On base ores with the guarantee of 55 per cent on old range and Mesabi Bessemer, and 51½ per cent on old range and Mesabi non-Bessemer, prices are: Old range Bessemer, $4.40; Mesabi Bessemer, $4.15; old range non-Bessemer, $3.60; Mesabi non-Bessemer, $3.40; all at lower lake ports.

Foreign iron ores, 7½ to 8 cents per unit, f. o. b. cars eastern seaboard. Freight rates from Philadelphia to eastern Pennsylvania, furnace points range from 35 to 75 cents per ton.

Semi-Finished Material

PITTSBURGH

Bessemer 4 x 4 billets with 0.25 carbon and less, $25.00; open-hearth rolling billets, $25.00; Bessemer sheet bars, $25.50 to $26.00; open-hearth sheet bars, $25.50 to $26.00 f. o. b. Pittsburgh and Youngstown. Forging billets, $30, Pittsburgh. Wire rods, $27.50 to $28.00; muck bar, $31, Pittsburgh.

PHILADELPHIA

Delivered to consumers' plants in Philadelphia and vicinity; 4 x 4-inch open-hearth and Bessemer rolling billets at $25.50 to $26.50, and forging billets at from $31 to $32; muck bar, $28 to $30.

Standard Shapes

PITTSBURGH

Standard structural shapes, 1.40c to 1.45c. For extras see card of Sept. 1, 1909.

CHICAGO

Standard structural shapes, 15 inch and under, 1.63c.

PHILADELPHIA

Delivered to consumers in Pittsburgh and vicinity. Standard structural shapes from eastern Pennsylvania mills, 1.55c to 1.60c. From Pittsburgh mills, 1.60c.

NEW YORK

Standard structural shapes delivered at New York by eastern Pennsylvania makers 1.56c to 1.61c. On forward deilvery, Pittsburgh district makers are quoting 1.61c, New York.

Plates

PITTSBURGH

Standard steel plates ¼ inch thick, 6¾ to 100 inches, 1.40c to 1.45c. For extras, see card of Sept. 1, 1909.

CHICAGO

Tank plates, 1¼ inches thick, 6⅝ to 100 inches wide, 1.58c to 1.63c.

PHILADELPHIA

Delivered to consumers' plants in Philadelphia and vicinity: Tank plates from eastern Pennsylvania mills for prompt or forward delivery 1.55c to 1.60c. The larger Pittsburgh makers quote 1.60c, but smaller mills in that district are doing 1.55c.

NEW YORK

Steel plates, tank quality, for prompt and forward delivery at New York by eastern Pennsylvania makers, 1.56c to 1.61c. Pitts-

burgh makers are quoting 1.56c to 1.61c,, New York.

Sheets and Tin Plate

PITTSBURGH

No. 28 black	2.15c to 2.25c
No. 30 tin mill black	2.15c to 2.25c
No. 28 galvanized	3.15c to 3.30c
No. 10 blue annealed	1.60c to 1.65c
No. 28 painted, corrugated	2.35c to 2.40c
No. 28 galvanized, corrugated	3.30c to 3.35c
Tin plate, 100-pound cokes	3.60c

PHILADELPHIA

Delivered to consumers' plants in Philadelphia and vicinity: No. 10 gage annealed sheets at 1.80c.

Pipe and Boiler Tubes

PITTSBURGH

	Black Butt.	Galv. Weld.
Steel, ¾ to 3 inches	80	71½
Iron, ¾ to 2½ inches	72	61
BOILER TUBES		
Steel, 3½ to 4½ inches	69	..
Iron, 3½ to 4½ inches	58	..

Other sizes of pipe and tubes take the usual advances as per official cards.

Rails and Track Material

PITTSBURGH

Steel rails, 50-pound and heavier, 1.25c per pound for Bessemer and 1.35c for open-hearth, carload lots; less than 500 tons 1.34c per pound; light rails on base weight of 40 to 45 pounds, 1.25c, schedule on the other weights being irregular and subject to negotiations; angle bars for standard sections, 1.50c base, Pittsburgh; track bolts, 2.40c base, Pittsburgh.

Railroad spikes, 4½, 5 and 5½ and 9-16 inch, 1.65c.

CHICAGO

Light rails, carloads, 25 to 45-pound, 1.25c, base; 16 to 20-pound, 1.30c; 12-pound, 1.35c; 8-pound, 1.40c.

Light section relayers, 45 pounds and under, subject to inspection, $22 and $23; standard section relaying rails, subject to inspection, $23 to $24.

Track fastenings, f. o. b. Joliet:

Angle bars, 1.50c; railroad spikes, 1.70c; smaller size spikes, 1.85c base; track bolts with square nuts, 2.20c to 2.25c.

Bars, Hoops and Bands

PITTSBURGH

Common iron bars, 1.60c, Pittsburgh; Bessemer and open-hearth steel bars, 1.40c; plow and cultivator, 1.40c; channels, angles, zees, tees, under 3 inch, 1.50c, all f. o. b. mill.

Hoops in carload lots, 1.50c to 1.60c, Pittsburgh; in less than carload lots, 1.65c; bands, 1.40c, base, with net extras, as per standard steel.

Cold rolled and ground shafting, 60 to 62 per cent off in carloads and 55 to 57 per cent in less than carloads delivered in base territory.

CHICAGO

Bar iron, 1.35c to 1.40c, hard steel bars rerolled, 1.50c; soft steel bars, bands and small shapes, 1.58c; hoops, 1.63c; smooth finished machinery steel, 1 inch and larger, 1.78c; shafting, 58 per cent off list for carload lots, 53 per cent off for less than carloads.

PHILADELPHIA

Delivered in consumers' plants in Philadelphia and vicinity: Steel bars, 1.55c to 1.60c on contract and common bar iron, 1.32½c to 1.42½c. Cut nails 1.90c to 1.95c, Philadelphia. Shafting 62 and 60 off in carloads and 57 and 55 off in less than carloads in base territory.

NEW YORK

Delivered in New York steel bars on contract from 1.56c to 1.61c, and common iron bars, 1.33c to 1.45c.

Bolts, Nuts and Rivets

Rivets

Button head structural rivets, 2.00c, Pittsburgh, cone head boiler rivets, 2.10c. Small rivets, 75, 10 and 10 off.

Structural rivets, Chicago, 2.00c; boiler rivets, 0.10c extra.

Bolt and Nut Discounts

(Delivered within 20-cent freight radius.)

Carriage bolts, ⅜ x 6 inches, small and shorter, rolled threads, 75 and 10; cut threads, 75 and 5; larger and longer, 70 and 2½.

Machine bolts with hot pressed nuts, ⅜ x 4 inches, smaller and shorter, rolled 75, 10 and 5; cut, 75 and 10; larger and longer, 70 and 7½.

Gimlet and cone point lag or coach screws, 80 and 10.

Hot pressed square, blank or tapped nuts, $5.70 off list; hot pressed hexagon blank or tapped, $6.30.

Cold pressed C. & T. square, blank or tapped, $5.70 off; hexagon, blank or tapped, ⅝-inch and larger, $6.60 off; ½-inch and smaller, $7.20 off.

Wire Products

PITTSBURGH

Wire nails, jobbers' carload lots, $1.65; retailers' carload lots, $1.70; cut nails (western makers), jobbers' lot, $1.65; painted barb wire, jobbers' carload lots, $1.65; retailers' carload lots, $1.70; plain wire to jobbers in carloads, $1.45; and to dealers in carloads, $1.50; polished staples, $1.65; galvanized staples, $2.05.

CHICAGO

Wire nails, jobbers' carload lots, $1.83; retailers' carload lots, $1.88; retailers' less than carload lots, $1.93; painted barb wire, jobbers' carload lots, $1.83; retailers' carload lots, $1.88; retailers' less than carload lots, $1.93; with 40c for galvanizing; plain wire, jobbers' carload lots, $1.63; retailers' carload lots, $1.68.

Cast Iron Pipe

CHICAGO

Four-inch water pipe, $27; 6 to 12 inches, $26; larger sizes, $24; gas pipe, $1 a ton higher.

NEW YORK

Six-inch pipe, 30 pounds to the foot, $23 to $25, f. o. b. New York, in carload lots.

BIRMINGHAM

Water mains: 4-inch, $20.00; 6-inch and up, $22.00. Gas main: $1 per ton higher than water main. Special fittings, $47.50 to $52.50.

Old Material

PITTSBURGH

(Gross Tons Delivered.)

Heavy melting scrap	$12.50 to 12.75
Rerolling rails	14.00 to 14.50
Malleable	12.00 to 12.25
Bundled sheet scrap	8.00 to 8.25
Iron axles	23.00 to 23.50
Old iron rails	15.00 to 15.50
Stove plate	9.00 to 9.25
No. 1 wrought scrap	13.00 to 13.50
Old car wheels	12.50 to 13.00
Low phosphorus	15.00 to 15.50
Machine shop turnings	7.25 to 7.50
No. 1 busheling	11.00 to 11.50
Cast borings	8.25 to 8.50
No. 1 cast scrap	12.25 to 12.50

PHILADELPHIA

Gross tons delivered to consumers' plants in eastern Pennsylvania and western New Jersey:

Old iron rails (nominal)	$17.00 to 17.50
Old steel rails (rerolling)	14.00 to 14.50
No. 1 heavy melting steel	11.50 to 12.00
Old car wheels	12.50 to 13.00
Old iron axles	25.00 to 26.00
Old steel axles	17.50 to 18.00
No. 1 railroad wrought	14.50 to 15.00
Wrought pipe	11.00 to 11.50
Cast borings	8.25 to 8.50
Machine shop turnings	8.00 to 8.50
Heavy cast (broken)	13.00 to 13.50
Malleable	12.00 to 12.50
Stove plate	9.50 to 10.00
No. 1 forge	10.00 to 10.50
Low phosphorus	15.00 to 15.50

Freight rates per ton on scrap from Philadelphia to principal eastern consuming points are: $0.60 to Ivy Rock, Pa.; $0.65 to Phoenixville, Pa.; $0.80 to Coatesville, Pa.; $0.85 to Bethlehem, Pa., Reading, Pa., and Roebling, N. J.; $1.10 to Pottsville, Pa., Lebanon, Pa., and Columbia, Pa.; $1.20 to Harrisburg, and Steelton, Pa.; $1.40 to Milton, Pa.

CLEVELAND

Gross Tons

Old iron rails	$15.00
Old steel rails (under 3 ft.)	13.00 to 13.50
Old steel rails (over 6 ft.)	13.50 to 14.00
Relaying rails	23.00 to 25.00
Old steel boiler plate	9.00 to 9.50
Malleable iron (railroad)	11.75 to 12.00
Axle turnings	7.50 to 8.00
Steel axles	18.00 to 19.00
Malleable iron (agricultural)	9.00 to 9.50
Heavy steel	11.25 to 11.50
Country mixed steel	9.00 to 9.50
Bundled sheet scrap	7.50 to 8.00

Net Tons

No. 1 R. R. wrought	$11.50 to 12.00
No. 1 busheling	10.00 to 10.50
No. 1 machine cast	11.50 to 12.00
No. 1 dealers' wrought	9.00 to 9.50
Machine shop turnings	4.50 to 5.00
Pipes and flues	7.50 to 8.00
Wrought drillings	4.50 to 5.00
Cast borings	6.00 to 6.25
Stove plate	8.25 to 8.50
Wrought iron arch bars	16.00
Wrought iron piling plate	14.00

CHICAGO

(Delivered in consumers' yards.)

Gross Tons

Old car wheels	$13.00 to 13.50
Old iron rails	13.75 to 14.25
Rerolling rails (5 ft. and over)	12.00 to 12.50
Old steel rails (3 ft. and und.)	11.25 to 11.75
Frogs, switches and guards	10.50 to 11.00
Heavy melting steel	10.50 to 11.00
Shoveling steel	10.00 to 10.50

Net Tons

No. 1 R. R. wrought	$10.25 to 10.75
No. 2 R. R. wrought	9.50 to 10.00
Arch bars and transoms	13.50 to 14.00
Knuckles, couplers and springs	10.75 to 11.25
Shafting	14.50 to 15.00
Iron car axles	20.25 to 20.75
Steel car axles	16.50 to 17.00
Locomotive tires	12.00 to 12.50
Dealers' forge	8.50 to 9.00
Pipe and flues	7.50 to 8.00
No. 1 cast	10.75 to 11.25
No. 1 busheling	9.00 to 9.50
No. 2 busheling	6.75 to 7.25
No. 1 boiler cut	8.25 to 8.75
Boiler punchings	12.00 to 12.50
Cast and mixed borings	5.25 to 5.75
Machine shop turnings	4.75 to 5.00
Railroad malleable	10.75 to 11.25
Agricultural malleable	10.00 to 10.50
Angle bars, splices, etc., iron	13.00 to 13.50
Angle bars, steel	10.00 to 10.50
Stove plate and light cast scrap	8.75 to 9.25

NEW YORK

Gross tons, New York dealers' prices at tidewater, usually for eastern Pennsylvania delivery:

Old car wheels (nominal)	$10.50 to 11.00
Heavy steel axles	15.25 to 15.50
Steel shafting	13.50 to 14.00
No. 1 heavy melting steel	9.50 to 9.70
No. 1 R. R. wrought	12.00 to 12.25
Wrought pipe (not galvanized)	9.00 to 9.25
Cast borings	6.00 to 6.50
Machine shop turnings	5.50 to 6.00
Heavy cast	10.75 to 11.00

Stove plate	7.50 to 8.00
Grate bars	6.25 to 6.50

Freight rates on scrap per ton to Steelton, Pa., Columbia, Pa., Pottsville, Pa., and Harrisburg, Pa., are $1.50 from Jersey City, and $2.00 from New York; to Coatesville, Pa., Ivy Rock, Pa., Phoenixville, Pa., and Reading, Pa., $1.50 from Jersey City, and $1.80 from New York; to Bethlehem, Pa., $1.10 from Jersey City, and $1.60 from New York; to Roebling, N. J., $1.00 from Jersey City, and $1.50 from New York; to Milton, Pa., $1.60 from Jersey City, and $2.00 from New York; to Jersey City, $1.00 from New York; to Newark, $1.10 from New York.

CINCINNATI

Gross Tons

Old iron rails	$11.50 to 12.00
Old steel re-rolling	10.00 to 10.50
Old iron axles	16.00 to 16.50
Heavy melting scrap	9.00 to 9.50
Relaying rails	18.75 to 19.25

Net Tons

Old No. 1 R. R. wrought	$9.00 to 9.50
Bundled sheet scrap	5.00 to 5.50
No. 1 yard wrought	6.75 to 7.25
No. 1 machine cast	9.50 to 10.00
No. 1 busheling	7.00 to 7.50
Stove plate	6.75 to 7.25
Machine shop turnings	5.00 to 5.50
Cast borings	4.50 to 5.25
Heavy turnings	5.25 to 5.75
Mixed cast	7.75 to 8.25
Breakage	5.50 to 6.50
Malleable	7.00 to 7.50

BIRMINGHAM

Old iron axles, (light)	$15.00 to 15.50
Old steel axles (light)	15.00 to 15.50
Old iron rails	12.50 to 13.50
No. 1 R. R. wrought	12.00 to 12.50
No. 2 R. R. wrought	10.00 to 10.50
No. 1 country wrought	9.50 to 10.00
No. 2 country wrought	8.50 to 9.00
No. 1 machinery cast	10.00 to 10.50
No. 1 steel scrap	10.50 to 11.00
Standard car wheels	12.00 to 12.50
Tram car wheels	10.50 to 11.00
Light cast and stove plate	8.25 to 8.75

BUFFALO

Gross Tons

Heavy melting steel	$10.50 to 11.00
No. 1 R. R. wrought scrap	13.00 to 13.50
No. 1 R. R. and mch. cast scrap	13.00 to 13.50
Old steel axles	17.00 to 17.50
Old iron axles	22.50 to 23.00
Car wheels	12.50 to 13.00
Railroad malleable scrap	12.00 to 12.50
Machine turnings	6.00 to 6.50
Heavy axle turnings	8.00 to 8.75
Cast iron borings	6.25 to 6.75
Low phos. steel scrap	16.50 to 17.00
Old iron rails	15.00 to 15.50
Boiler plate, sheared	12.50 to 13.25
Bundled sheet scrap	8.00 to 8.50
Stove plate (net ton)	9.75 to 10.00
Locomotive grate bars	10.00 to 10.50
No. 1 busheling scrap	10.50 to 11.00
No. 2 busheling scrap	8.00 to 8.50
Wrought pipe	9.50 to 10.00

ST. LOUIS

(Dealers' buying prices.)

Gross Tons

Old car wheels	$11.25 to 11.75
Old iron rails	12.00 to 12.50
Re-rolling rails (5 ft. and over)	11.00 to 11.50
Old steel rails (3 ft. and und.)	10.00 to 10.50
Light sec. relayers (45 pounds and und.) subject to inspec.	24.00 to 24.50
Relaying rails, subject to inspec.	24.00 to 24.50
Frogs, switches and guards	9.50 to 10.00
No. 1 R. R. heavy melting steel	9.50 to 10.00
Shoveling steel	9.00 to 9.50

Net Tons

No. 1 railroad wrought	$10.50 to 11.00
No. 2 railroad wrought	10.00 to 10.50
Arch bars and transoms	13.50 to 14.00
Knuckles, couplers, springs	9.50 to 10.00
Shafting	13.50 to 14.00
Steel car axles	15.00 to 15.50
Iron car axles	19.25 to 19.75
Locomotive tires	11.00 to 11.50
Pipe and flues	7.50 to 8.00
Tank iron and cut boilers	7.25 to 7.75
No. 1 cut busheling	9.00 to 9.50
Cast iron borings	4.50 to 5.00
Machine shop turnings	5.50 to 6.00
Railroad malleable	8.50 to 9.00
Agricultural, malleable	7.00 to 7.50
Stove plates	8.00 to 8.50
Angle splice bars (iron)	11.00 to 11.50
Angle splice bars (steel)	9.00 to 9.50

Store Prices

CINCINNATI

Steel bars, 1.90c to 2c; iron bars, 1.85c to 1.90c; plates and shapes, 2.05c to 2.10c; sheets, blue annealed No. 10, 2.20c to 2.25c; black, No. 28, 2.65c; galvanized, No. 28, 3.75c; cold rolled shafting, round, square, hexagon and flat, 50 off.

CLEVELAND

Steel bars, 2.00c; plates and shapes, 2.10c; iron bars, 2.00c; sheets, No. 16 blue annealed, 2.40c; No. 28 black, 2.85c; No. 28 galvanized, 3.95c.

CHICAGO

Steel bars, 1.85c; iron bars, 1.85c; hoops, 2.50c; shapes and plates, 1.95c; No. 10 blue annealed sheets, 2.15c, black, No. 28, 2.80c; galvanized, No. 28, 4.00c.

PHILADELPHIA

Steel bars, 2.00c to 2.05c; structural shapes, 2.00c to 2.10c; plates, 2.00c to 2.10c.

NEW YORK

Steel bars, 2.05c; structural shapes, 2.15c; plates, 2.15c.

FOR EARLY NEEDS

Railroads Are Buying Rails—Two Orders for Next Year.

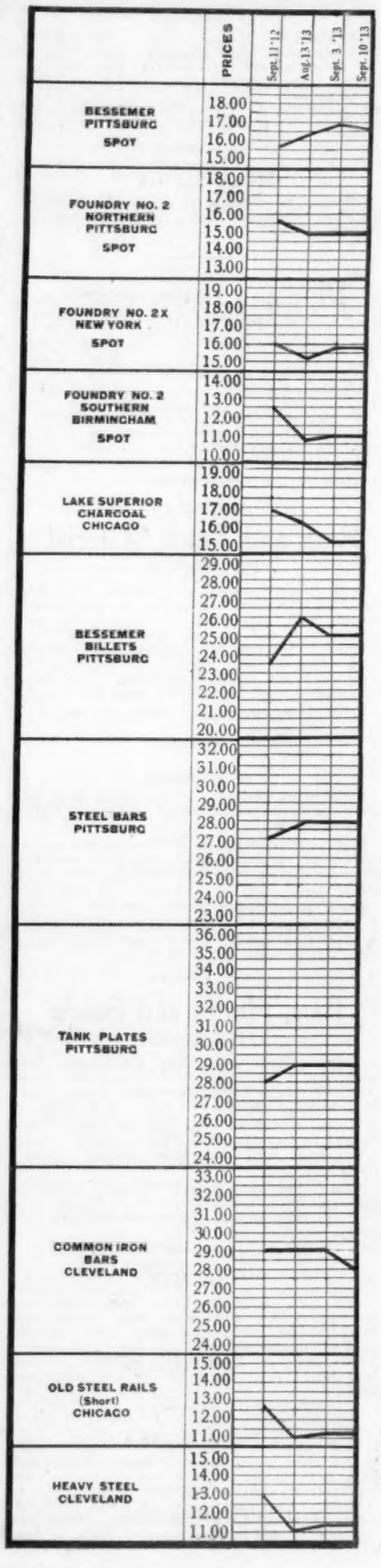
New York, Sept. 10. (By wire.)—The Nickel Plate has placed an order for 5,500 tons of Bessemer rails with the Illinois Steel Co. for shipment after Jan. 1. This is the first rail order taken by Corporation mills for next year. Many miscellaneous rail lots for prompt shipment are being closed, which well illustrates the present temper of railroads in steel buying. They are holding back on forward requirements, but are closing for fair tonnages for immediate needs. The Carnegie Steel Co. has taken 2,500 tons of this business from the Lehigh Valley, 4,000 from the Erie and 1,000 for Carolina, Clinchfield and Ohio; a gulf line took 1,000 of the Tennessee company, and the Illinois Central 1,000 of the Illinois Steel Co.

HEAVY BUYING

By Cast Iron Pipe Companies in Eastern Market.

Philadelphia, Sept. 10. (By wire.)—The Standard Cast Iron Pipe & Foundry Co., Bristol, Pa., inquires for 5,000 tons of forge and No. 3 for November-December shipment. Practically all pipe makers along the Delaware river are now negotiating or buying actively and the tonnage now pending is easily 25,000 to 30,000 of lower grades.

PRICE CHART



Tilting Furnaces Installed by Lackawanna Steel

Two Units of Large Capacity for Refining Steel by the Duplex Process Form Part of New Open-Hearth Plant

Two tilting open-hearth furnaces, with a capacity approximating 20,000 tons each per month, recently have been placed in operation at the plant of the Lackawanna Steel Co., Buffalo. These furnaces form a part of No. 2 open-hearth plant now under construction, which will contain, in addition to the tilting furnaces, eight large stationary steel refining units. Four of these eight furnaces are now being built. The tilting furnaces were designed by the engineers of the Lackawanna Steel Co., and in addition to their novel features of construction, the results of their operation has been satisfactory both in quality of steel produced and in output. Operating on hot metal exclusively, each furnace has been producing at a rate in excess of 20,000 tons per month, furnace No. 15, which was the first to be completed, having made more than 22,000 tons during the month of July.

The new plant is situated directly north of the company's Bessemer steel works, this location having been decided upon after a careful consideration of the available sites. The plant is situated centrally with reference to the mills that use the steel and at the same time it is convenient to the equipment of the Bessemer plant to permit of making steel by the duplex process in connection with the two tilting open-hearth furnaces. Furthermore, the location of the plant is such that the hot metal has to be carried only a short distance from the converters to the furnaces. The building and its equipment are of exceedingly heavy construction throughout to insure against possible delays due to the shutting down of the machinery through breakage.

The Open-hearth Building

The building in which the two tilting furnaces are installed is 352 feet long and 124 feet wide. It is of steel construction throughout, and on account of the great length of the tilting furnaces and their location on the line of the center columns, the steel frame work is unusually heavy. The crane runway girders each have a span of 110 feet, are 12 feet in depth and weigh approximately 115 tons each. The buildings were designed by the company's engineers and the steel work was fabricated in its shops.

The ample proportions of the building and the general arrangement of the furnaces and equipment are shown in the cross-section, Fig. 2. The relation of the tilting furnaces to the Bessemer plant is clearly indicated in Fig. 5. The charging floor is served by a 75-ton crane having a span of 55 feet, 10 inches and is equipped with an auxiliary trolley of 25 tons capacity. The pouring side of the furnace is served by two 165-ton cranes equipped with auxiliary trolleys of 35 tons capacity, having a span of 58 feet 6 inches. An interesting feature of these charging cranes is the provision of a 5-ton auxiliary hoist on the 35-ton trolley, which is ample for tilting the spiegeleisen ladle during the recarburizing operation. The charging machine is of the high type and this, together with the

FIG. 1—ONE OF THE FURNACES TILTED TO TAP THE METAL, SHOWING ALSO THE RECARBURIZING OPERATION

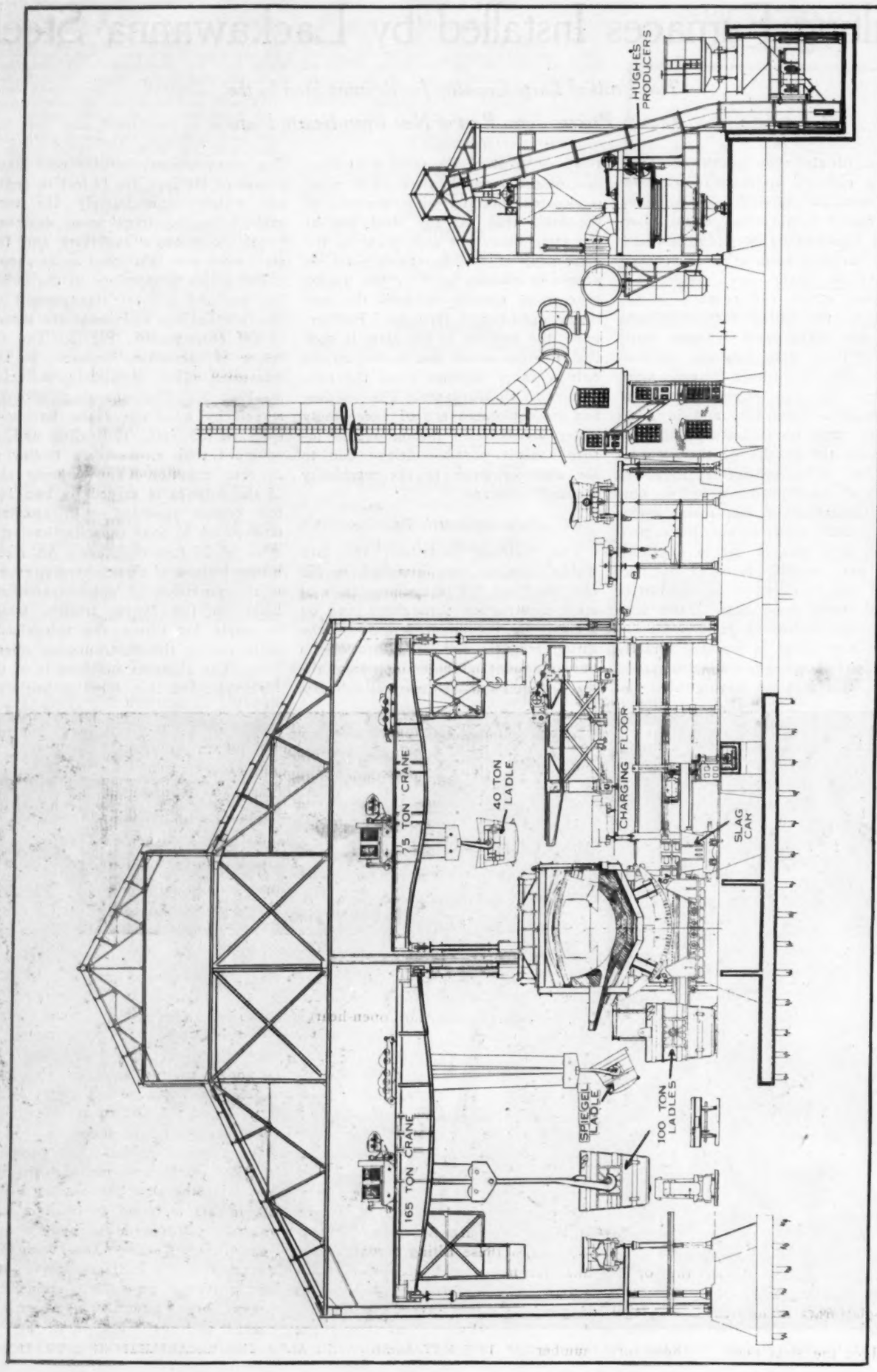


FIG. 2—CROSS-SECTION OF THE LACKAWANNA STEEL CO.'S OPEN HEARTH PLANT NO. 2, SHOWING THE TILTING FURNACE

traveling cranes, were furnished by the Morgan Engineering Co., Alliance, O.

The cold material charged into the furnaces by the charging machine consists chiefly of burnt lime, mill scale and spout skulls. In addition to the track for the charging machine which extends the length of the charging floor, a third track is provided which will be used for handling hot metal in ladle cars from the mixers to the stationary open-hearth furnaces. On a platform outside of the building two additional tracks are provided for handling and switching stock for the stationary furnaces and material required for the tilting furnaces. The stock yard is located west of the open-hearth plant and is

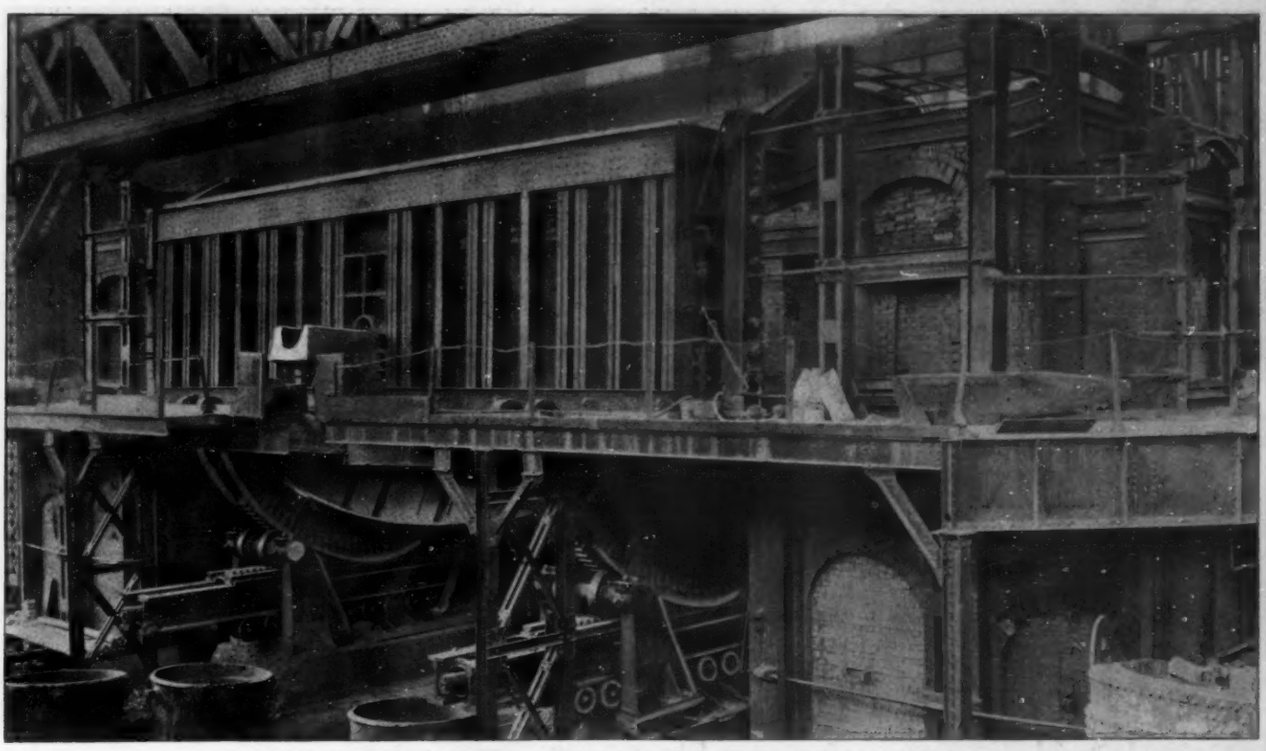


FIG. 3—VIEW OF POURING SIDE OF ONE OF THE TILTING FURNACES

650 feet long, being commanded by two 10-ton, 100-foot span Morgan cranes. All of the material for the tilting and stationary furnaces is loaded into the charging boxes in this yard from which it is conveyed to the furnaces on the charging cars. The charging car tracks are at yard level and the cars are pushed up a trestle to the charging floor by an 18 x 24-inch, six-wheel locomotive. On the pouring side of the furnace two tracks extend the length of the plant, one being narrow gage for the ingot mold cars and the other standard gage. Along the east wall of the open-hearth building and above the pouring platform, is located the spiegel track.

All of the steel made in these furnaces is produced by the duplex process. Hot metal is delivered from the blast furnaces to the mixers at the Bessemer plant, two of which are installed, of 250 and 300 tons capacity, respectively. This iron has an average phosphorous content of standard basic iron and is blown either full, or in part, as required. The converter equipment consists of four 12½-ton vessels, two of which ordinarily are used in connection with the tilting furnaces. From the mixers the metal is charged into the converters and after blowing, is poured from the converter into a ladle supported by a jib crane, and from this ladle it is again poured through a large nozzle into a ladle on a transfer car. This pouring operation eliminates the possibility of Bessemer slag being carried from the converters into the open-hearth furnaces. The transfer cars are motor-driven and carry ladles of 25 tons capacity each, sufficient to hold two heats from a converter. These transfer cars, which operate on the ground level, carry the hot metal from the converters to the south end of the open-hearth plant where a 75-ton crane elevates the ladle to the charging floor level and delivers it to one of the tilting furnaces. When charging one of these tilting furnaces with this hot metal, the latter enters the hearth from a portable spout placed in position at one end of the furnace door by the charging machine. The number of ladles of metal required for a charge varies, but four is the usual number.

If metal from the mixers is to be charged into the tilting furnaces provision is made for pouring it from the mixers into a motor-driven transfer car of the same type as used for metal blown in the converters. This car is conveyed to the south end of the open-hearth plant and the ladle is delivered to the furnace by a 75-ton crane. This method of conveying hot metal from the Bessemer plant was adopted on account of the existing levels of the converters and mixers which pour at a lower level than the open-hearth charging floor.

After refining the steel, and when one of the furnaces is to be tapped, it is tilted and a heat of from 95 to 100 tons is poured into a ladle suspended from the 165-ton crane. The spiegeleisen for recarburizing is carried in 18-ton ladle cars from the cupolas in the Bessemer plant and is added to the steel in the ladle while the furnace is being tapped. The method of adding the spiegel to the steel is clearly shown in Fig. 1. After the furnace has been tapped it is tilted back into melting position, and after the slag line has been built up, if this is found to be necessary, the cycle of operations is repeated.

The framework of the tilting furnaces is of exceedingly heavy steel construction and rests upon two heavy box girders supported by rocker castings. The latter are set on 30-foot 6-inch centers and rest on

heavy I-beam girders which support the entire weight of the tilting portion of the furnace. These girders also form a part of the tilting mechanism and are supported by a series of steel rollers mounted in a massive base casting. The tilting of the furnace is effected by a rack bolted to I-beam girders meshing with a gear segment bolted to the rocker castings and actuated by a steel screw journaled between the I-beams and held by self-aligning thrust bearings of the ball type so that no lengthwise motion of the screw can occur. The screws are cross-connected by shafting below the floor level to avoid any twisting stresses in the structure, and each is driven by a 50 horsepower motor, which provides for tilting the furnace in either direction.

The furnace hearth is 13 feet wide, 40 feet long, with a length of 50 feet over the chill plates. On the charging side seven doors have been provided, one 2 feet 6 inches x 2 feet 11 inches at the center of the furnace and on either side of this door there are two doors 3 feet x 3 feet 6 inches, with a smaller door near each port 2 feet x 2 feet 4 inches. The center line of the ports is the center of rotation of the furnace whereby the ports have been made stationary. Irrespective of the position of the furnace, the ports in the furnace always maintain their proper relation to each other and cold air is prevented from impinging on the ports. In the construction of the furnace care has been exercised to reduce to a minimum the clearance between the stationary ports and those in the furnace to reduce, as much as possible, the amount of cold air that can enter the furnace after it has been heated. The ports are of the Blair type. The regenerator chambers are of ample size and the binding is unusually heavy. The checker volume for one end of the furnace is 5,388 and 3,084 cubic feet for the air and gas checkers, respectively. Each furnace has a self-supporting steel stack, 180 feet high and 7 feet in diameter inside the lining. The gas and air reversing valves are of the water-cooled and water-sealed type, designed by the engineers of the Lackawanna Steel Co., and are used on all of the open-hearth furnaces erected at the Buffalo plant. The gas valves are 36 inches in diameter and the air valves, 48 inches.

FIG. 4—VIEW OF CHARGING SIDE OF THE TILTING FURNACES

Gas Producers

The furnaces operate on producer gas, this plant being located 66 feet west of the open-hearth furnace building. The producer house is a steel structure, 153 feet long and 24 feet wide. Four Hughes, self-cleaning mechanical producers are provided for each furnace. The gas mains are located outside of the producer house and the crossover mains to the furnace are carried overhead and are equipped with dust pockets. The coal is discharged into the hoppers on the producers from a continuous overhead steel bunker. The coal is discharged from cars into a track hopper and after passing through a roll crusher it is carried by a bucket elevator to the overhead bunker, where it is distributed by a 24-inch belt conveyor.

Explorations Discontinued

A Duluth-Superior syndicate has been conducting explorations by drilling in the Boscobel, Wis., section, where some time ago it was reported in the daily press extensive iron outcroppings were discovered. It appears that these iron deposits are the gossan of iron sulphide bodies which probably were formed between the limestone and the underlying sandstone, and as far as data are available at the present time, there is no expectation that these deposits will have any great commercial importance or that they will lead to a disclosure of outlying areas of the Lake Superior formations as was done at Baraboo. The Boscobel district lies west of Madison, near to the Mississippi river, and these deposits have been known for a long time and at one time furnished a basis for high expectation on the part of some promoters as copper prospects. The deposits have been adversely reported on by the state geological survey. The results of the limited drilling are said to be such that further explorations of the deposits will not be continued. There is a similarity between these deposits

and the deposits at Waukon, Ia., which are being worked successfully on an extensive scale with the Goltra treatment process. The Waukon deposit consists of residual ore in a blanket of clay in a limestone formation, and it is extracted by washing and by a roasting process which renders the ore sufficiently magnetic to be removed by magnetic processes. The Waukon deposit is said to be extensive, upwards of 10,000,000 of tons, and the cost of mining is said to be well within the profitable limit.

The Tonawanda Board & Paper Co., Tonawanda, N. Y., is to build a large addition to its Goose Island plant. A part of the extension will be the erection of a modern paper trestle along Tonawanda creek.

Structural Steel Rate Suspended

Washington, Sept. 9.—The operation of proposed tariffs advancing, from 1½c to 2½c per 100 pounds, the rate on shipments of structural iron and steel stopped in transit for fabrication at points throughout Central Freight Association territory, excepting certain points in Illinois, will further be suspended by the Interstate Commerce Commission from Sept. 12, 1913, until March 12, 1914. Ohio and Pennsylvania points are the principal places affected.

The Trussed Concrete Steel Co. has filed a complaint with the commission against the Erie railroad et al., asking reparation of $32.53 because of an alleged overcharge on a shipment of 40,661 pounds of expanded metal from its plant in Youngstown, O., to the Wisconsin Bridge & Iron Co., Marquette, Mich., made on July 21, 1911. The complaint claims the correct rate is 26½c, instead of 34½c per 100 pounds, said to have been charged. A typographical error in the preparation of the tariff of the Erie road, the initial carrier, is assigned as the probable cause for making a charge of 34½c, it being claimed that all other lines in the same district carry a rate of 26½c.

The Roanoke Refined Metal Co., Roanoke, Va., recently incorporated with a maximum capital of $500,000, is planning to reopen the old West End Rolling Mill. This mill was built in the early 90's and has never been operated for more than two or three months at a time. It was originally a part of the West End Furnace property, and was purchased by the Louckes interests several years ago.

Iron Ore on Iron Island

There is some interest and considerable mystery about reported discoveries of high-grade iron ore deposits on Iron Island in Lake Huron, near Parry Sound. Last spring, a flotation was offered in New York in which it was stated definitely that this deposit contained over 30,000,000 tons of ore running 60 per cent in iron and various reports were offered to confirm this. The reports were not made public and the tonnage claims were seriously questioned by those who were in a good position to know. Recently it has been reported that strong Canadian interests have secured control of the property, that extensive drilling has been done and that the deposit is of importance as a prospective source of ore supply. An agent of the Canadian syndicate is endeavoring to finance the proposition abroad, and it is probable that the facts about the matter will soon come out.

The addition to the plant of the Clipper Belt Lacer Co., Grand Rapids, Mich., is nearing completion. The special machinery required for this work has been purchased and it is hoped to start operations in 60 days.

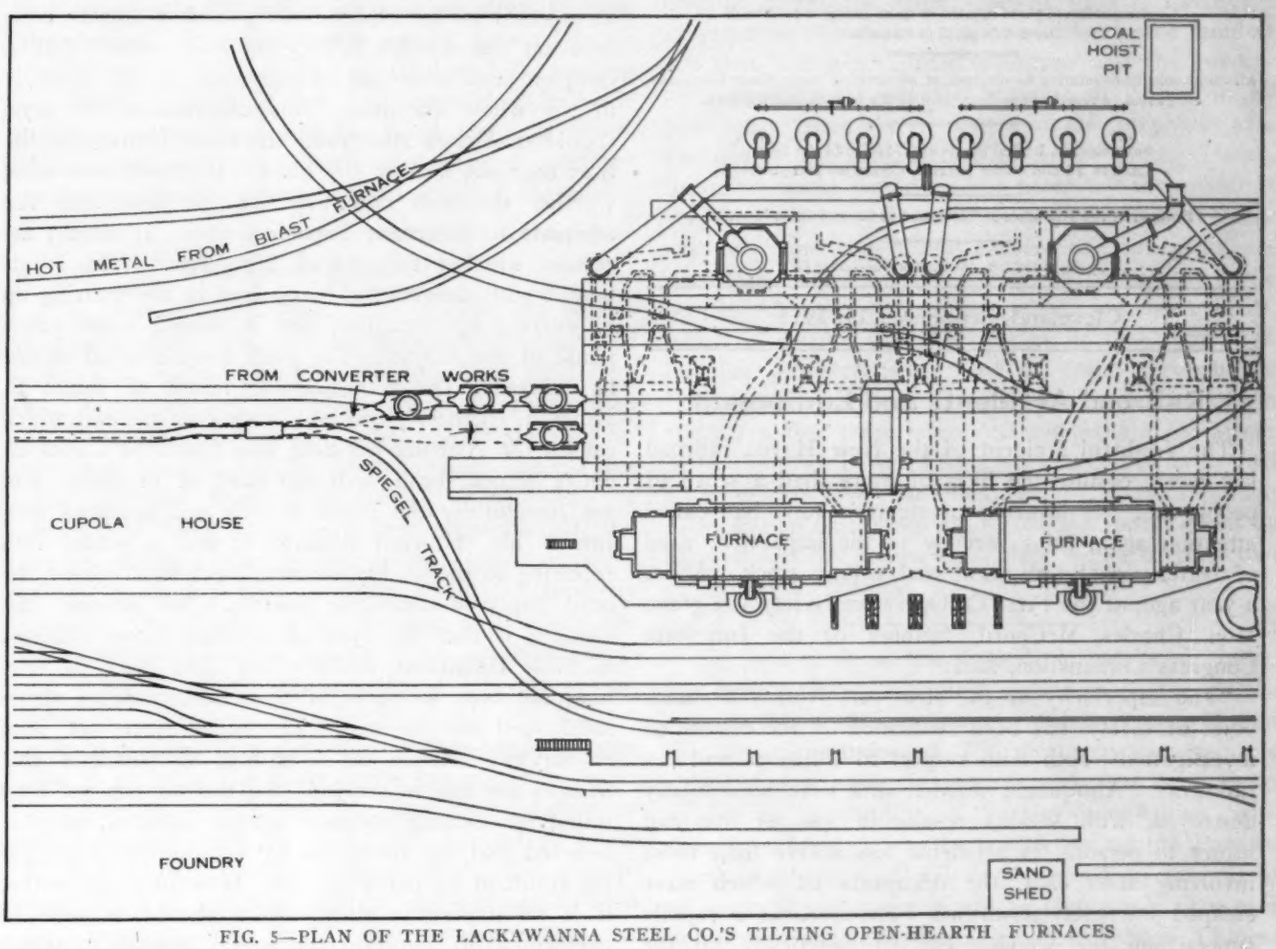


FIG. 5—PLAN OF THE LACKAWANNA STEEL CO.'S TILTING OPEN-HEARTH FURNACES

THE IRON TRADE REVIEW

DEVOTED TO THE IRON, STEEL, MACHINERY AND FOUNDRY INDUSTRIES

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Railroad Accidents and Equipment

The frightful accident of the New Haven railroad last week, costing the lives of more than a score of people and the injuring of many others, has called attention again most forcibly to the imperative need of better signal equipment and rolling stock. About a year ago, at the First Co-Operative Safety Congress, Hon. Charles McChord, member of the Interstate Congress Commission, said:

"The superiority of the steel car, from the standpoint of safety, has been confirmed by the results of investigations, both with respect to collisions and derailments. Antiquated wooden cars have been totally destroyed, with serious results in loss of life and injury to persons, in accidents less severe than those involving steel cars, the occupants of which have escaped practically unscathed. The steel car is rapidly superseding the wooden car on practically all the prominent roads, and it may safely be predicted that unnecessary injury and loss of life in collisions and derailments, by reason of the use of antiquated and structurally unsound cars, will soon be a thing of the past."

The hope that antiquated cars would soon be a thing of the past is still far from realization, although President Elliott, of the New Haven, declares that the company is doing all in its power to hasten the construction of steel cars. A railroad in the heart of the most thickly populated part of the country in such deplorable need of equipment is indeed a remarkable spectacle. If it had expended more money for steel cars, modern signals and other equipment, and less in attempting to form a monopoly of the steamships and traction lines of New England, doubtless many lives would have been saved.

The public will not be slow to demand of railroads and manufacturers alike that every possible precaution for the prevention of accidents be taken. In this connection, the report which has just been made by H. W. Belnap, chief inspector of safety appliances of the Interstate Commerce Commission, upon a derailment on the Louisville & Nashville railroad, appears at an opportune moment. Mr. Belnap declares that the facts disclosed by the investigation of this derailment emphasize the statements made in a number of other reports dealing with this subject, and, as asserted in the report dealing with a similar accident on the Lehigh Valley railroad, show that a complete and searching examination should be made of the whole question. This examination, he says, should deal with steel rails from the furnace to the time they are laid on the track. It should determine whether the tests now used on the steel rails are adequate to determine imperfect rails. It should ascertain whether the use of high-carbon steel is attended with dangers not recognized in the drawing up of current specifications, and it should cover every phase of the subject. The most minute detail should be covered. The accompanying report of James E. Howard, engineer-physicist, shows that the rail which caused the Alabama accident was fractured across its entire section, head, web and base, at 14 places, and yet structurally the metal of this rail appeared uniform. Mr. Howard declares it was a sound rail, referring to the quality of metal, but in 11 places the head displayed transverse fissures. The peculiar fact about it is that this type of fracture seems confined to those conditions which affect steel rails, as they have not been found in other examinations of structural steel nor in steel rails which have not been in service. Hence, it is natural to conclude that fissures are due to service. No method has yet been found for locating insipient interior fissures, but it is believed that the formation of a transverse fissure is the result of an overload. Mr. Howard declares that it is an imperative duty, which should at once be performed, to ascertain the actual stresses to which the rails are daily subjected. The effects of loads which are placed upon the columns of buildings are known, as are also the stresses on which the members of bridges are designed. So should those of rails.

The proposed investigation should not be considered as in any way reflecting upon the splendid work which has been done during the past few years by railroad men, manufacturers of rails and other members of learned societies. It should be regarded, rather, as contributing to past efforts, and as such should be welcomed and assisted by all who are interested in the important questions involved.

The Financial Chronicle, of New York, which al-

ways very ably advocates the cause of railroads, recognizes the demand which has gone up all over the land that wooden cars in the passenger service be replaced by steel cars, but it cites the fact that this change will necessitate the raising of large sums of money, and calls attention to the July returns of the railroads, showing the shrinkage in net earnings. The *Chronicle* inquires how can the railroads get the capital to make the demanded improvements while the net income contracts and credit becomes more impaired? "It is the most serious phase of the problem that the legislature will have to grapple with," says the *Chronicle*. "Driving the roads into bankruptcy will not promote safety of operation." The seriousness of the situation is fully realized, as to the financial difficulties and to the capacity of the car-building plants to meet the demand. The public will not be disposed to be unreasonable. It is doubtful whether bills pending in congress, providing that the change shall be made within a certain time, will be passed, but it is nevertheless true that the country will demand evidence promptly given of real efforts to improve conditions.

The Levy Resolution

The country will not take very seriously the resolution offered by Congressman Jefferson N. Levy, of New York, owner of Monticello, the home of Jefferson, instructing the attorney general of the United States to suspend further proceedings in the dissolution suit brought by the United States against the United States Steel Corporation. This does not imply that there is no merit in the proposition, but merely indicates that in the present state of public mind the national administration would not seriously consider the abandoning of the suit, and, unless the president and attorney general were agreeable, it is not at all likely that congress would pass the resolution.

At any rate, it is probably just as well for the case to go on. The Corporation has presented some very important testimony, but has hardly begun to offer evidence, and the country is entitled to know all there is to be said in defense of the Corporation. After that, if any time, will be the moment to stop the litigation. The chances are, however, that the suit will drag along, first through the circuit court of the United States and then in the supreme court, and that a final decree will not be entered in less than four or five years. By that time, we may all know more about corporations and how to control them.

It is announced that the taking of the testimony of the loquacious Munhall has been completed by the Senate and House committeees and about all that has been testified to which has not been controverted is that the National Association of Manufacturers is in the habit of supporting candidates who in its opinion will advocate wise measures if sent to the halls of congress, while advocates of all sorts of unwise legislation are opposed. It may also be remarked that the investigation has shown how woefully deceived associations of manufacturers sometimes are by the men they employ. The more direct the connection between legislators and business men, the better it will be, and the employment of agents to act as go-betweens should be avoided wherever possible. The business man whose interest in legislation is direct should not hesitate to make the direct appeal.

An Armor Plate Suggestion

The agitation in favor of the government establishing an armor plate plant is not likely to result in definite action for some time to come. There are very serious objections to it, in addition to the familiar one that it is a socialistic enterprise. If the government were to go into the business, it would, in all probability, mean the retirement of the companies now engaged in the manufacture of armor plate. Hence, the government would find it necessary to provide a very large capacity to meet its needs in time of peace and war, and this would involve a tremendous expenditure, which would hardly be justified by the people. Another suggestion which has been made, which is worthy of consideration, is that instead of building a government plant or going through the farce of bidding, when everybody knows, and has known for years, that there is no real competition for armor plate, the price be fixed by a commission of army and navy officers and manufacturers, after a thorough investigation as to cost. A reasonable profit could be allowed and the private companies would be permitted to remain in business.

Pig iron made at the Tata Iron Works, in India, has been received in limited quantities on the Pacific coast at about $26, delivered. While it is said that this iron is satisfactory for most purposes from a chemical standpoint, the price is such that there seems to be no probability of serious competition with American iron. Upon the completion of the Panama canal, southern iron will be benefited to the extent of about $5 per ton and will be better able than ever before to compete with foreign irons. Some Chinese iron is also being used in San Francisco, but the lowest price at which it can be delivered, $22 per ton, is about the same as the price at which southern iron is being sold. The excitement about serious competition of English and Chinese iron seems to have had little foundation.

With the tariff bill about to be put to a vote late Monday night, some of the senators, notably La Follette, held on to the very last chance to talk. How they did hate to stop talking! And after months of loquacity! The country has not enjoyed it half as much as the senators.

ORIENTAL IRON

Being Tried at San Francisco—Competition Not Feared.

San Francisco, Sept. 5.—Business generally is dull in San Francisco. The iron trades are suffering from the same causes that make the depression in other lines. Most of the foundries are running on about half to two-thirds their forces.

Considerable curiosity has been expressed as to the effect of the importation of Chinese or Han Yang and Tata or Indian iron. These two irons are being put to use here, in some instances as basic iron in the manufacture of iron or of steel and also as foundry iron for mixture with scrap.

The consensus of opinion is that the Han Yang product is the better of the two. This has been used by the Pacific Coast Steel Co. as a basic iron. The Pacific Coast Steel Co. is a new venture of rather small dimension when compared with the big steel mills of the east, but the enterprise is growing and is paying quite heavy dividends. Attention heretofore has been paid only to the manufacture of steel bars for concrete construction of the reinforced type. New additions, indications of prosperity, are being added to the mills and furnaces continually. This may be taken as an indication of prosperity and while it is true that the iron trade generally languishes on account of dull times, this industry has been singularly active. A great deal of the time during the past year, it has not been able to keep pace with the demand. The largest amount of the imported iron, and this has been but a very small amount, has been used by this company.

From various sources it is gleaned that the prices paid for the Tata and the Chinese pig has varied from $22 to $26 per ton, the highest price being on the Indian iron. The duty is $2.50 a ton and the freight on the Tata product is in the neighborhood of $9 a ton. On the Chinese iron, the duty is, of course, the same, but the freight is less, being only $3 at present.

The prices asked for this Oriental iron preclude any possibility of serious competition being waged successfully with eastern-American product, or even the Alabama iron, which is landed here at $22.

The Oriental iron has an undeniable advantage for some uses, in that it is extremely low in phosphorus and sulphur and very high in carbon. The Chinese iron is imported into this country by the great Japanese house of Mitsui & Co. There is now being awaited a cargo of the approximate value of $10,000.

Indian iron, in order to become a factor here or in the eastern part of the United States, should be laid down in San Francisco at $16. Furnace-side quotations have been made on Han Yang to San Francisco parties at $11 a ton. Local foundry men say that, if the iron could be landed here with lower freight charges and less duty, it is of such superior quality it might become a dangerous factor. They figure that, if the duty be removed and the freight lowered when the canal is opened, its invasion of the eastern field might be carried on successfully.

Han Yang furnaces are located at Han Yang just opposite Han Kow on the Yangste Kiang river. The product for the last two years, owing to disturbed conditions at this point, has been very light.

The Robert Dollar Steamship Co., of San Francisco, has until now been the sole American agents of this product. The furnaces are owned and operated by the Chinese government. The rumor is that the contract as to sole agency with the Robert Dollar company has been abrogated. It is stated here with a measure of assurance that the entire output for the Orient and for the United States has been placed with the Mitsui company as selling agents. The Robert Dollar company is said to be simply fulfilling its contracts. The cargo coming does not exceed $10,000. Delivery is made here at from $23 to $26.

The importers claim it is an ideal iron to use as a basic in combination with the Scottish product but what has been used on the coast cannot be spoken of as anything more than sample lots.

Indian or Tata pig is produced at the furnaces at Sakchi, India, about 155 miles from Calcutta. The company is financed by English capital. Six months' production of the Sakchi furnaces has been: Jan. 3 to Sept. 3, 1912, 55,000 tons; Oct. 12 to June 12, 1912, 108,000 tons; total, 163,000 tons.

In addition, the plant produced some 22,000 tons of structural steel, in the same period. The company is also a manufacturer of steel rails of a very superior quality.

Mitsui & Co. are the sole agents for the Orient and are also agents for the United States. Heretofore they have imported into this country some 1,300 tons and they are said to have 1,000 tons more coming. In 1912, 800 tons came in through the house of Balfour, Guthrie & Co. Indications are that prices will be cut, that freights will go down and that the duty will be eliminated.

This iron is shipped on regular liners. If it were possible to obtain return cargoes on the Pacific coast, it would more readily be shipped on "wind jammers" and in steamers as ballast, but the return cargoes are not available.

Charles M. Gunn, the popular manager of the Columbia Steel Works, near this city, is at present out of town on vacation. The Columbia Steel Works is making improvements in its plant and its scope has been much enlarged within the last 12 months. This plant is busy all the time.

The Union Iron Works has secured the contract for an oil carrier for the Associated Oil Co., the contract price reported as $850,000. In addition an impetus will be given matters through the building of two caissons aggregating about the same amount.

Pittsburgh Steel Co.'s Stack Blown In

The Pittsburgh Steel Co. has blown in its second stack at Monessen, Pa., where the company recently completed a blast furnace plant consisting of two 500-ton furnaces of the most recent design. Stacks are 90 feet high, with bosh diameters of 22 feet 6 inches. The building of these stacks will supply the Pittsburgh Steel Co. with sufficient pig iron to meet its needs, and will reduce consumption of scrap to a considerable extent, as the company plans to use direct metal. The company recently acquired ore properties in the new Cuyuna range, and has made arrangements for its supply of coke through the remainder of the year. Stack No. 1 was lighted by Miss Sarah M. Rowe, daughter of Wallace H. Rowe, president of the company; stack No. 2 was lighted by Miss Adelaide M. Bindley, daughter of John Bindley, vice president of the company.

Coking Land Sold

According to advices from Waynesburg, Pa., J. V. Thompson has sold 1,000 acres of valuable coking coal land in Cumberland and Monongahela townships to the Youngstown Sheet & Tube Co., Youngstown, O., at an average of about $1,000 an acre. Although the report has not been absolutely verified, those interested in the transaction say negotiations have been opened for the purchase of the property involved. It is not known definitely when operations will begin.

GIVEN A TIP

That They Had Better Buy Pig Iron —Philadelphia Foundrymen Meet.

Following an adjournment over the summer, the Philadelphia Foundrymen's Association resumed activities on Sept. 3 by holding its 230th regular meeting. The main feature of the meeting, which was held at the Hotel Walton, Philadelphia, was a paper on "The Grinding Wheel", read by Francis M. King, treasurer of the Challenge Machine Co., Philadelphia. Mr. King asserted that by milling spiral grooves in the cutting surface, the efficiency of an emery wheel may be increased by 30 per cent. By means of stereopticon slides he illustrated the type of milling cutter recommended for this work.

The adjournment of the regular meeting was followed by a luncheon given the members by Howard Evans, the secretary. Short speeches were made by Mr. Evans, Thomas Devlin, H. L. Haldeman and others, who recounted the experiences they have had during the summer. Mr. Haldeman gave the members a word of advice as to the pig iron situation. He said he believed pig iron would not long continue to be sold at the present low prices, and he advised that foundrymen who have contracted to sell castings should not lose time in covering their pig iron requirements.

ALUMINUM COMPANY

Defended by Secretary Oliver—Replies to Senator Kenyon.

Washington, Sept. 9.—A strikingly able defense of the Aluminum Co. of America, subject to innumerable attacks and prosecution in the past, was made on the floor of the senate last week by Senator Oliver, Republican, of Pennsylvania. In a carefully prepared speech, bristling with facts and figures, he answered charges made some time previous by Senator Kenyon, Progressive Republican, of Iowa, whose amendment to put aluminum on the free list was defeated by a vote of 55 to 12, taken immediately after Senator Oliver's address. Senator Kenyon's amendment was held by him to be consistent with the Democratic platform to put upon the free list every commodity adjudged by a court to be controlled by a combination in violation of the Sherman antitrust act.

Senator Kenyon, when assistant attorney general under the Taft administration, appeared as a prosecutor against the Aluminum company.

It was pointed out by Senator Oliver, to controvert the statements of Senator Kenyon, that the Aluminum Co. of America, during practically all the years it has been in business, has been subject to the open and vigorous competition of the product of European plants.

"The manufacture of aluminum in Europe," he said, "has more than kept pace with the progress of the industry in the United States, so that today the European plants produce approximately 100,000,000 pounds annually, while the normal demand of Europe amounts only to about one-half that figure. The European producers are protected in all parts of the world, except in the United States, by their cartels and syndicate agreements, which are favored by their governments and from the universal method of doing business in continental Europe, in all the great industries. As a result of this, the United States is a favorite field which the British and continental manufacturers use as a dumping ground for their surplus product."

Data were submitted to show that during the fiscal year ended June 30, last, importations of aluminum into the United States amounted to 28,158,525 pounds, with a value of $4,961,297, a unit value, showing an average price of 17.6 cents per pound, and the duties collected amounting to $2,196,555.03. The senator inquired as to what this will amount to and how greatly will the development of the industry in this country be retarded if this duty is reduced to 2 cents per pound on ingots as proposed in the tariff, or swept away as suggested by Senator Kenyon's amendment. To Senator Oliver it seemed like insanity to surrender this revenue unless it is proposed that the government in the future depend entirely upon the income tax for its revenue. It was shown that the average price of aluminum had dropped from $2.50 per pound in 1890 to 18.11 cents per pound in 1912.

Senator Oliver cited facts to refute the statement that the Aluminum company had a monopoly on bauxite. He said none of the aluminum cooking utensil companies had complained of the treatment given them by the Aluminum Co. of America, and admitted that the Aluminum company owns about 1,600 out of the 4,000 shares of the capital stock of the Aluminum Castings Co., but declared it did not and by a contract cannot control the Aluminum Castings Co.

By way of coming domestic competition with the Aluminum Co. of America, Senator Oliver referred to the plant being built at Whitney, N. C., by the Southern Aluminum Co. He then took up the famous Swiss agreement which was discussed by Senator Kenyon, who referred to its provisions as "so infamous as to constitute business treason". Senator Kenyon had stated that "in this agreement the foreign company absolutely refuses to sell aluminum, directly or indirectly, to the United States".

Senator Oliver said that nowhere in the agreement is there any mention whatever made of the United States government, and that never, at its inception or during its existence, were sales to the United States government contemplated or considered by either of the parties.

In opposing the proposed amendment of Senator Kenyon, as one which would work a hardship upon independent companies, Senator Walsh, Democrat, of Montana, furnished the following figures as to the steel trade, taken from the work "Concentration and Control," by President Van Hise, of the University of Wisconsin, who said independent companies control the following percentages:

	Per cent.
Pig iron, spiegel, and ferro	56.6
Steel ingots and castings	45.7
Rails	41.1
Structural shapes	53
Plates and sheets of all kinds	50.3
Black plate produced in tin mills	47.1
Coated tin mill products	38.9
Black and coated sheets produced in sheet mills	61.1
Wire rods	32.7
Wire nails	44.5
Wrought pipes and tubes	61.8
Seamless tubes	44.7

Under the proposed amendment, it was said by Senator Walsh, should the government obtain a decree, it would be absolutely necessary to subject every independent competitor of the United States Steel Corporation to the competition which would result by putting all the products of the Corporation upon the free list.

Lake Erie Ore Receipts

Out of a total movement of 7,677,601 gross tons of Lake Superior iron ore during August, 6,075,726 gross tons came to Lake Erie ports, distributed as follows:

Port.	Gross tons.
Buffalo	876,409
Erie	98,706
Conneaut	1,184,390
Ashtabula	1,291,293
Fairport	358,718
Cleveland	1,404,946
Lorain	578,230
Huron	98,500
Sandusky	.....
Toledo	150,337
Detroit	34,197
	6,075,726

IRON MINING NEWS

Shipping from Cuyuna-Duluth

The Cuyuna-Duluth mine at Ironton has made a record in shaft sinking, all the work having been accomplished in eight months' time. The work of sinking a three-compartment shaft in Section 32, township 47, range 29, has been commenced by the Duluth-Brainerd Co. This property is north of the Cuyuna-Mille Lacs. At the Adams mine at Orelands, a steel headframe has recently been erected. Drifting is in progress and the mine will soon be in position to ship. The property is being developed by the Cuyler-Adams interests. At Brainerd, the Brainerd-Cuyuna Mining Co. has commenced sinking a shaft at South Sixth street, a mile from the postoffice and within the city limits. The mine will be known as the Brainerd-Cuyuna No. 1. Farther east and also within the city limits, the company will later open another property. At Barrows, M. A. Hanna & Co.'s Barrows mine is hoisting and stockpiling ore.

Pennington Starts Shipments

Tod, Stambaugh & Co.'s Pennington open pit mine, directly west of the Armour No. 1, Cuyuna range, has started shipping and ore is being removed as rapidly as was the overburden. In six months' time, two shovels took out 1,100,000 cubic yards of earth. The ground was ideal for excavating. Neither boulders nor rock nor gravel were encountered, just sand from the grass roots to the ore. Very little water was met with, and the little that accumulated from rains and seepage was easily pumped out. The overburden averaged 70 feet in depth.

Bailing the Smith

The bailing out of the Smith mine, a new property of the Cleveland-Cliffs Iron Co., in the Swanzey field of the Marquette range, has been completed and mining operations will soon be in progress. Unwatering the workings has been an extensive task, one that has required nearly two months' time. The Smith was shut down Dec. 1, 1911. Its development will now be entered upon actively. Men will be put to work gradually until a full force is employed. Considerable construction work in the Swanzey district has been accomplished this year by the Cleveland-Cliffs Co. The buildings erected include a captain's residence, five dwelling houses, two power houses, a substation and a combination office and warehouse, all of these at the Mackinac and Gardner mines, new and adjoining properties, the development of which has attained that stage where only concrete shafts have been sunk.

To Drain Carson Lake

To transfer more than 200,000,000 gallons of water from Carson Lake to the stream leading into Kelly Lake is the task that it is reported will be undertaken on the Mesabi range by the United States Steel Corporation, if plans said to have been prepared by the engineers are adopted and the necessary appropriation is made. Drilling is reported to have shown the existence of a big body of ore underneath the bed of Carson Lake. In the Chisholm field of the Mesabi, the Steel Corporation has resumed the stripping operations at the Monroe-Tener mine. The work had been suspended since last winter. No ore has been taken from this pit since 1907, and at that time the property was mined on the milling system. In the same locality, the Great Northern interests are stripping the Dunwiddie property. Work was started last summer and has been pushed steadily ever since. Three shovels are at work and have been most of the summer. About 200 men are employed. It is the intention to push the work until it is finished. On account of this pit being so close to the Monroe mine, it has been necessary to remove several buildings, which stood close to the excavation. Part of the land on the north side has been used for the last few years by people at the Monroe for truck gardening. Next year, this area will be taken into the stripping. It is estimated that 2,000,000 cubic yards of overburden has already been taken out. This is only a small part of the total stripping to be done. It is reported that the Great Northern interests have planned to open four properties in the vicinity of Calumet, at the western end of the Mesabi, the work to be started the coming fall. One of these tracts, owned by the state, contains more than 10,000,000 tons of ore.

Hanna Mine on the Gogebic

Preparations are being made by M. A. Hanna & Co., of Cleveland, to open a mine on the Gogebic iron range. The property includes the Wakefield, south of the village of Wakefield, Mich., the Brotherton and other producers. The ore was discovered by Seldon Rose, of Marquette. Mr. Rose has given a lease to the Hanna company and it will not be long before ore is shipped. The deposit lies so close to the surface that it is the intention to strip the overburden and mine with steam shovels. Mr. Rose, who is a mining engineer and geologist, was attracted by the rock formations of the vicinity and he decided to institute exploratory work. He procured a lease to the tract from the Keweenaw Association, of Boston, the owner of the fee. A churn drill was employed and ore was encountered at depths from the surface of from 30 to 70 feet. The deposit has proved to be of large proportions. The ore is of the highest grade. Since this discovery, several drills have been put into commission to the east and the west by other interests and it is expected the development of other mines will be the outcome. The ore occurs considerably farther south than any heretofore located in the Wakefield district, with indications that the deposits will prove more extensive than those of the ore measure to the northward.

Extension Nearly Finished

With its extension from Crystal Falls in commission in 1914, the Chicago, Milwaukee & St. Paul railroad will become an important factor in the transportation of ore from the Iron River district of the Menominee range. The grading has been completed and the work of laying the rails will be finished within a few weeks. The assembling yards will be a mile east of the village of Stambaugh. There will be 16 tracks, each one-half a mile in length. The yards will be capable of holding 600 cars. Adjacent to the tracks will be an eight-stall roundhouse, water tank, coal sheds and other necessary buildings. The district has waited many years for the coming of a second railroad and the arrival of the first train will be duly celebrated. The Chicago & Northwestern heretofore has had the only line extending to the field.

MEN OF THE IRON TRADE

H. C. FRICK, who has been abroad for some time, is now returning.

EDSON O. SESSIONS, consulting engineer, has opened an office in the Marquette building, Chicago.

NORRIS J. CLARK, secretary of the Upson Nut Co., Cleveland, has gone on a trip to Yellowstone Park.

W. E. COREY, former president of the United States Steel Corporation, returned to New York Aug. 28, after a two month's stay abroad.

R. L. PARRISH, president of the Oriskany Ore & Iron Corporation, Lynchburg, Va., has gone abroad, and will return about the first of October.

W. C. WILLIAMSON, secretary of the Peck-Williamson Co., Cincinnati, has gone on a month's vacation in Michigan and along the great lakes.

WM. J. FLEMING, assistant manager of sales of the Bourne-Fuller Co., Cleveland, started recently on a trip to Yellowstone Park and California.

OTTO HOHENSEE, member of the building code committee of New York City, has been made superintendent of the Hartford Iron Works, Hartford, Conn.

E. C. GARY, chairman of the United States Steel Corporation, who has been abroad for several months, will return upon the Imperator, due in New York Sept. 17.

W. J. DOORLEY has been appointed general manager of the Scottdale Machine & Mfg. Co., a reorganization of the Scottdale Foundry & Machine Co., Scottdale, Pa.

HARRY MANSELL, for the last ten years statistician at the Ohio Works of the Carnegie Steel Co., Youngstown, O., is now identified with the Cambria Steel Co., Johnstown, Pa.

A. W. SMITHERS, chairman of the board of directors of the Grand Trunk railway, has arrived in Montreal from England and is preparing to make his annual inspection of the system.

C. S. MUZZARELLI, consulting engineer of the Dover Boiler Works, Dover, N. J., has resigned to become vice president of the New York Structural Co., in charge of the contracting department.

HENRY KOHNLE has resigned as superintendent of the foundry operated by the French Oil Mill Machinery Co., Piqua, O., to accept a similar position with the Platt Iron Works Co., Dayton.

STANLEY B. DOWD, formerly manager of the machinery and supply department of the Fairbanks Co., Boston, is now sales representative in the Boston district for W. H. Leland & Co., Worcester, Mass.

FRANKLIN F. DAVIS has been appointed southern sales representative of the Diamond Iron Works, Minneapolis, with headquarters in Atlanta, Ga. The company makes sawmills and transmission equipment.

B. A. WALLINGFORD, of the firm of Walter-Wallingford & Co., pig iron and coke brokers, 1412 Traction building, Cincinnati, has returned from a month's vacation, part of which was spent at Hot Springs, Va.

J. G. BUTLER JR., vice president of the Brier Hill Steel Co., Youngstown, O., has returned from a short stay in England during which he took part in the dedication of the monument to the Pilgrims at Southampton.

D. K. BARRY, associated with the Sibley Scythe Co., at North Newport, N. H., for the past seven years, has severed his connection with that company, and acquired an interest in the Baxter Machine Co., of Lebanon, N. H.

P. J. GORDON, general superintendent of the Republic Iron & Steel Co., and John E. Perry, assistant to President Bray, both of Youngstown, have gone to Duluth and will visit the company's ore properties in Minnesota.

CHARLES N. REPLOGLE, assistant superintendent of the steel car department of the Cambria Steel Co., has resigned that position to accept the office of general manager of the Ralston Car Co., Columbus, O., after Oct. 1.

R. H. DONALDSON, for seven years general manager of the Franklin plant of the American Steel Foundries, has resigned and J. E. Lumbrix, assistant general manager, has been placed in charge until a successor is named.

ALBERT P. SAXER, who has been a member of the sales force of Manning, Maxwell & Moore, Cleveland, will become identified with the Laughlin-Barney Mack Co., 1901 Union Bank building, Pittsburgh, after Sept. 15.

GUSTAV RASMUS, 2 Rector street, New York City, consulting engineer, has been appointed sole sales representative of the John Kleinewefers Sohne, Crefeld, Germany, designers and builders of rolling mill machinery and power equipment.

L. W. BARNETTE, for many years secretary and sales manager of the Franklin Steel Co., Franklin, Pa., has resigned to accept a position with the Blaw Steel Construction Co., Pittsburgh. His headquarters will be at 165 Broadway, New York.

W. E. FARRELL has severed his connection with the Treadwell Engineering Co., Easton, Pa., and taken offices in the Northampton National Bank building, Easton, Pa., where he will engage in general consulting and engineering contracting practice.

FRANK WILLIAMS, superintendent of the South Works of the American Steel & Wire Co., Worcester, Mass., has been appointed superintendent of all the works of the company at New Haven, Conn. He is succeeded at Worcester by Edward Hentz.

C. H. SANDERSON, recently electrical engineer in charge of switchboard and power station design with the Westinghouse Electric & Mfg. Co., Pittsburgh, has been appointed chief engineer of the Havana Electric Railway, Light & Power Co., Havana, Cuba.

WALLACE G. IMHOFF, formerly superintendent of diamond drilling in the Iron River district of Michigan for the Duluth Diamond Drill Co., has been appointed assistant superintendent of the briquetting plant operated by the Carnegie Steel Co., Duquesne, Pa.

WM. BROWNHILL SMITH, owner of the Electrical committee of Glasgow, Scotland, where an electrical plant is about to be constructed costing over a million dollars, is traveling in Canada making a preparatory inspection of provincial and municipal electric power systems.

E. D. MEIER, New York City, was elected president of the American Boiler Manufacturers' Association at its recent meeting in Cleveland. Other officers are P. M. Rees, Pittsburgh and J. Don Smith, Charleston, S. C., vice presidents, J. D. Faresy, Cleveland, secretary and J. F. Wangler, St. Louis, treasurer.

WESLEY MERRITT, former industrial commissioner of the Santa Fe railroad, who has become prominently identified with the East Texas Brown Ore Development Co., is now at Longview, Tex., directing the operations of the iron ore properties of this company. The first cargo of this ore is now being shipped to Philadelphia.

GUY ELLIS has been appointed sales manager for the ice department of the Henry Vogt Machine Co., Louisville, Ky., succeeding H. E. Barrett, who resigned recently. Mr. Ellis' place as purchasing agent has been taken by S. F. Nuttall, who has resigned as purchasing agent for the Louisville plant of the United States Cast Iron Pipe & Foundry Co.

B. J. ROSS has been appointed manager of the Clarksburg plant of the Phillips Sheet & Tin Plate Co., Clarksburg, W. Va. He was formerly manager of the Aliquippa plant of the Jones & Laughlin Steel Co., at Aliquippa, Pa., where he had charge of the tin plate operation since the plant was built at that place. Mr. Ross at one time was associated with the American Sheet & Tin Plate Co., at New Castle, Pa.

JOSEPH A. McDONALD, formerly with the Carnegie Steel Co. at its Youngstown, O., mills, has been appointed general superintendent of the Cambria department of the Cambria Steel Co., Johnstown, Pa., with which interest he has been connected since last January. Mr. McDonald obtained his first mill experience in the Edgar Thomson plant of the Carnegie company. Warren W. Worthington has been appointed general superintendent of the Gautier department.

GEORGE M. BERRY, second vice president and treasurer of the Thomas B. Jeffery Co., Kenosha, Wis., manufacturing Rambler and Jeffery motor vehicles, has resigned to engage in business on his own account. Mr. Berry was associated with the Jeffery concern for more than 12 years, and until a year ago was secretary of the corporation, being then promoted to second vice persident and treasurer. Mr. Berry has not announced his plans for the future. His successor has not been elected.

T. J. DRISCOLL, for the past year and a half connected with the engineering department of the Pittsburgh Crucible Steel Co., on the construction of its new plant at Midland, Pa., has been appointed chief draftsman, effected Sept. 1. Mr. Driscoll formerly was engaged, for seven years, with the engineering department of the Pennsylvania Steel Co., Steelton, Pa., and previously with the Wellman - Seaver - Morgan Engineering Co., Cleveland, on outside construction. He is a graduate of the Massachusetts Institute of Technology, class of '99.

SAMUEL H. WHITAKER, Cincinnati, formerly assistant to the managing director of James Watson & Co., Glasgow, Scotland, and manager of the works of the Dayton Coal & Iron Co., Dayton, Tenn., has joined the firm of Walter-Wallingford & Co., pig iron and coke brokers, Traction building, Cincinnati. Mr. Whitaker entered the iron and steel business 27 years ago as office boy in the offices of the Dayton Coal & Iron Co., and gradually rose to assistant to the managing director and manager of works, with offices in the First National Bank building, Cincinnati. The works of the Dayton Coal & Iron Co. have recently been closed, following the failure of James Watson & Co., in Scotland, the owners.

NEW BUSINESS

The machinery market continued to mark time through the first ten days of September, exhibiting no improvement over the condition which existed the past month, but inquiries in certain lines are just beginning to pick up. On the whole, the past month is believed to represent a larger volume of business than August of last year, while the stability of the market at the present time is reflected by the optimism of manufacturers and dealers operating through the several large centers of trade. The conclusion of present tariff legislation is much desired.

In New York, the machinery market during the past week has shown an improvement in the volume of inquiries received. The Pennsylvania railroad has inquired for 12 machine tools and the Boston & Maine has called for bids on a short list of specifications. In addition, a considerable number of inquiries for small lots of tools have been received from manufacturing companies. The outlook for an improved volume of buying is, therefore, considered promising. At present, however, comparatively few orders are being booked. A number of export machinery houses report that they are enjoying an unusually good demand from abroad for all kinds of machinery.

In Pittsburgh, no noticeable improvement has been reflected so far this month by the market for general equipment. The prolonged heat of summer has extended vacations and a large number of projects are being held up for the return of officials to active duties. Demand for single tools continues fairly satisfactory, and manufacturers of heavy rolling mill equipment are figuring on a number of undertakings, which are being more or less secretly conducted.

In Cleveland, the dullness in machinery trade felt through August has continued during the first week in September, although dealers believe that the month will develop a good volume of business. The Lake Shore has not closed on its list for Air Line Junction, the Pennsylvania is reported in the market for some machine tools at Indiana Harbor, while the Erie is still holding out on its requirements. The American Steel & Wire Co., Cleveland, has closed on only one or two tools in the list compiled a year ago. New inquiries for electrical equipment are brisk, although orders during the past week have been slow. Second-hand machinery market is fair.

In Philadelphia, the machinery business for August shows an increase over that during the corresponding period of last year, although trade for the first week of September is not so brisk. A great number of inquiries are noted during the past week and expectations indicate that the demand will be greatly accelerated during the next three weeks. There is a continued demand for single tools but no large orders are being placed. The second-hand machine market is sluggish with few inquiries.

In Cincinnati, machinery manufacturers are gradually becoming more optimistic in regard to a better fall business, and there is apparently a more cheerful feeling throughout the trade in general. The iron molders' strike was settled several weeks ago, and the teamsters' strike that for some time was a large factor in handicapping business, has been lost by the strikers. Sales, especially in the machine tool line, however, are no better, and apparently most of orders within the next few months will come from foreign territory. Domestic business is mostly limited to single tools as they are needed. Local makers of power plant equipment have received some good contracts recently, and manufacturers of special equipment, such as laundry and sugar machinery, are fairly busy. Boiler and tank plants and makers of small electrical equipment also report better business.

CALIFORNIA

SACRAMENTO.—The Phoenix Milling Co. is planning to construct a large flour mill and will purchase complete new milling machinery. Contracts have been awarded for a reinforced concrete grain elevator containing five 60,000 barrel bins. Contracts for this building are to be awarded separately. Architect J. P. Herold, Forum building, is in charge of the work.

CONNECTICUT

HAMDEN.—The Mt. Carmel Brass Foundry Works, Inc., has been incorporated; $50,000; by W. G. Mayer and R. Biondi, Waterbury, and B. Wesbecher, New Haven.

DISTRICT OF COLUMBIA

WASHINGTON.—Proposals for furnishing steel and miscellaneous ironwork for torpedo storehouses, track pile drivers, steel reinforcing bars, shovels, picks, rivets, bolts, etc., will be received until Sept. 17 by the general purchasing officer, Isthmian Canal commission. Further information relating to these requirements (Circular No. 193) may be obtained on application to F. C. Boggs, major Corp of Engineers, U. S. A., General Purchasing Officer.

FLORIDA

TAMPA.—The Sunlight Mfg. & Garage Co. has completed the construction and equipment of its plant here and started operation.

GEORGIA

SAVANNAH.—The Wilkinson Machine Co. has secured a 15-year lease on property between Barnard and Whitaker streets on River street, with a river frontage, and is planning to erect a new plant. C. G. Wilkinson, president.

IDAHO

LEWISTON.—Camas Prairie Railroad Co. is to begin the construction of terminals here at once to cost $250,000.

MULLAN.—A 1,000-ton capacity milling plant is planned here by the Hunter Co. to take the place of the 300-ton plant now in use.

ST. ANTHONY.—The Ashton & St. Anthony Power Co., capitalized at $250,000, has asked the utilities commission for permission to dam the north fork of Snake river above Oshton, with a view to erecting a power plant.

ILLINOIS

CHICAGO. — The Ajax Forge Co. has changed its name to the Ajax Co.

CHICAGO.—The Monarch Tool Machinery Co. has increased capital from $5,000 to $30,000.

INDIANA

ANDERSON.—A line of machinery is to be manufactured here by the newly-organized Anderson Die & Model Co., which has been incorporated with an authorized capitalization of $10,000. Those interested in the company are Isaiah Miley, L. E. Poole and H. L. Hedrick.

COLUMBUS.—M. O. Reeves, of the Reeves Pulley Co., and a number of prominent business men and capitalists of this city, are negotiating for a controlling interest in the Maid Motor Truck Co., Indianapolis. If the deal can be closed, it is regarded as likely that the plant will be moved to this place.

INDIANAPOLIS.—Arrangements are being completed for the manufacture of the Auglaize motor truck in this city, the Koogle Automobile Co. having closed negotiations to manufacture and market the truck. A two-story factory building is to be erected immediately. The truck is now manufactured at New Bremen, O.

INDIANAPOLIS.—Work on the new factory building of the Stenotype Co., at Mars Hill, an industrial suburb southwest of Indianapolis, has been started. The company recently moved its general offices here from Owensboro, Ky., and has taken the entire thirteenth floor of the Lemcke annex. When the new plant is completed here, the factory will be moved from Owensboro.

INDIANAPOLIS. — Dean Brothers Steam Pump Works, one of the pioneer manufacturing concerns of the city, is preparing to expand. The company has bought property adjoining the company's plant in West Tenth street, and here, at an early date, will build a substantial addition to its plant. The company now has a total frontage of four hundred feet in Tenth street.

JEFFERSONVILLE.—Plans have practically been completed whereby Owen L. Carr, Rushville, Ind., will establish electric light plant for operation of street lighting system.

MARION.—The Marion Machine, Foundry & Supply Co., advises the recent increase in capital was to make possible extension of its business.

MUNCIE.—The Delaware Brass & Aluminum Co., recently incorporated, is completing the construction of a plant at Twelfth and Walnut streets. John Beckett, formerly of the Machinist Foundry Co., is president and his son, Charles Beckett, is secretary and treasurer. (Previously noted.)

TERRE HAUTE.—The Automatic Machinery Mfg. & Sales Co. has issued $20,000 preferred stock.

KENTUCKY

HARRODBURG.—The city lighting plant will be enlarged as soon as a committee of the council reports on the situation. About $10,000 will be expended.

LOUISVILLE.—The National Power Co., recently organized to manufacture a water power motor, plans the erection of plant at once. S. F. Crecilius, Equitable building, is engineer.

OWENSBORO.—L. D. Baer probably will purchase machine tools for automobile repair shop in connection with large garage which he is preparing to build.

PRINCETON.—Frank Hughes is equipping a machine shop for boiler and engine repairs.

MASSACHUSETTS

HOLYOKE.—Higgins & Co., brass founders at 11 Park street, have started work building another story to their foundry. Ellsworth & Howes, architects.

NORTH EASTON.—The foundry of Grant Bros. here was badly damaged by fire recently.

WORCESTER. — The Eastern Bridge & Structural Co. has the contract for the steel work for the office building to be erected on Bridge street, Springfield, for Frank L. Dunlap. The building will be 60 x 100 feet, five stories, of brick and steel, fireproof construction.

MICHIGAN

BATTLE CREEK.—Having completed the manufacture of this year's output, the M. Rumely Co. has shut down the Advance thresher plant for from four to eight weeks. Extensive improvements are planned. About half of the force will be retained.

CASSOPOLIS.—The National Cement Stave & Silo Co. has been organized to do business here.

DETROIT.—The J. E. Bolles Iron & Wire Works has been incorporated to deal in iron with a capital stock of $100,000.

DETROIT.—The Michigan Electric Welding Co. has just completed an addition to its plant on Hart avenue practically doubling its floor space.

DETROIT.—The Maxwell Motor Co. is to establish a plant in Canada, the Maxwell Motor Co. of Canada having been incorporated for that purpose.

DETROIT.—The Towar's Wayne county creamery on Henry street is planning to erect a new five-story plant of steel fireproof construction. John C. Stahl, engineer, will prepare plans.

DETROIT.—E. T. Birdsall has about completed the design of a cycle car for Chicago capitalists who will manufacture the car in Detroit. It is planned to put out 1,000 cars the first year.

DETROIT.—Marshall N. Hunt, of Sault Ste. Marie, Ont., was the only bidder for the pumping station and eight engine shelters at the new Soo lock. His bid was $95,036 for the pumping station and $22,477 for the engine shelters.

DETROIT.—The Progressive Forge Co. has just been organized, capital $100,000, and will erect a plant to be in operation the first of next year. Three buildings are planned and three acres has been bought as a site. Alfred Johnson, superintendent of the R C-H Corporation, is president of the company. Drop forgings for automobiles will be made.

DETROIT.—The Bay City & Western railroad, now being built from Port Huron to Bay City, is to be extended west to Lake Michigan, with terminal at Manistee, according to reports. It is thought that the Grand Trunk is financing the project for the reason that the Grand Trunk wants a new lake port north of Grand Haven to save time in reaching the northwest with lake shipments.

EAST GRAND RAPIDS.—Proposals will be received by J. C. Laraway, village clerk, until Sept. 15 for water works bonds running from 5 to 20 years and with 5 per cent interest.

GRAND RAPIDS. — The West Michigan Steel Foundry Co. is installing a Shaw electric traveling crane in its main foundry building.

GRAND RAPIDS.—The construction of a new bridge across the Thornapple river here is declared necessary by State Engineer Dewart, of Lansing.

GRAND RAPIDS.—Building permits have been taken out by the board of education for improvements to the Alexander and East Leonard street schools. The improvements will cost $40,000, of which the plumbing will cost $10,000.

GRAND RAPIDS.—The assets of the Grand Rapids Motor Truck Co. have been sold by the Grand Rapids Trust Co., receiver, to Frank T. Hulswit, for $17,050. Mr. Hulswit assumes the real estate mortgage. It is announced the company will be reorganized and the plant reopened.

GRAND RAPIDS. — Rumsey & Works, civil engineers, are completing plans and specifications for a new water-works system for East Grand Rapids and will be out for bids in about a week. The system will cost in the neighborhood of $25,000. The pumps will be driven by motors, the water being pumped into a tank of 50,000 gallons' capacity placed upon a steel tower 90 feet high. Three miles of mains will be laid.

HARTFORD.—The Hartford Spray & Gas Engine Co. has purchased the Olds & Stowe planing mill and will equip it to make a folding window screen, folding crate, spraying tanks, gasoline engines and other products.

HASTINGS. — The Advance Mfg. Co., which has been making here the Barnes vacuum cleaners for three years, has moved to Kalamazoo where larger quarters have been secured. Most of the stockholders reside in Kalamazoo.

HOLLY.—The Patterson Mfg. Co. has increased its capital stock from $50,000 to $75,000. The company manufactures wagons and implements.

MUSKEGON.—The Advance Mfg. & Supply Co., of Chicago and Muskegon, has been incorporated with a capital of $100,000.

NILES.—The Bremer-Wilson Mfg. Co. has engaged in manufacture of automobiles, gas engines, and all kinds of tools and small machinery with an authorized capital of $100,000.

MISSOURI

KANSAS CITY.—The Graff Construction Co., Crary building, Seattle, Wash., has the contract for constructing a 2,300-foot viaduct here. Same will require 2,000 tons of reinforcing steel at an approximate cost of $600,000. C. F. Graff will have active charge of the work, which will be under the direct supervision of Harold E. Ketchum, also of Seattle.

ST. LOUIS. — The Commercial Foundry Co. has been incorporated; $25,000; by F. P. Giggs, J. P. Becker and C. O'Loughlin.

MONTANA

KALISPELL.—The South Fork & Kalispell Copper Co. has been organized with a capital of $1,000,000.

NEW JERSEY

ELIZABETH.—Bids will be received up to Sept. 22 for a power plant to be constructed at the Tuberculosis Farm, near Elizabeth. J. M. Cady is director.

TRENTON.—It is reported that the American Steel & Wire Co. will make improvements to its Trenton plant this fall that will cost close to $100,000.

NEW YORK

BUFFALO.—The E. & B. Holmes Machinery Co. is planning to erect an addition to its plant in Chicago street, at a cost of $20,000. Plans by architects Lansing, Bley & Lyman. Main addition to be 45 x 116 feet, two stories. A 20-ton elevator will be purchased.

HUDSON. — The Mechanical Handlor Co. is building a new plant, and is asking for catalogs from machine tool dealers. It will be in the market for the machinery for its plant in about six months.

LONG ISLAND CITY.—The Queensboro Bridge Loft Corporation has plans for a 5-story factory building, 70 x 185 feet, which will be erected on Sanwick street. The estimated cost is $95,000.

NEW YORK CITY. — The Turner Construction Co. has a contract for a power house to be erected at the Buffalo works of the Standard Oil Co.

NEW YORK CITY.—Lee & Hewitt, architects, are receiving bids for the construction of a silk mill, to be erected for Ludwig Littuer, at Yonkers, N. Y. The building will be three-stories and 52 x 200 feet.

NEW YORK CITY.—The Imperial Metal Products Corporation has been incorporated to purchase, sell and deal in and with all kinds of automobiles, trucks, shelving, etc.; by L. J. Gallagher and J. W. Colopy Jr., both of New York City.

NEW YORK CITY.—The Turner Construction Co., 11 Broadway, has been awarded the contract for a two-story reinforced concrete building 400 x 420 feet. The building will be erected at the Bradley Works of the American Agricultural Chemical Co., North Weymouth, Mass.

NEW YORK CITY. — Construction work has been started on the garage and service building for the R. & L. company, eastern distributors for the Garford Automobile Co. The building will be 189 x 200 feet, located at 150th street, Gerad and River avenues, Bronx.

OHIO

AKRON.—The Atlantic Foundry Co. is completing an addition to its plant.

AKRON. — The Pyle Brass & Aluminum Works is building a brass foundry at 122 Glenwood avenue, equipment for which has not yet been purchased.

AKRON.—The International Harvester Co., Chicago, is adding two reinforced concrete buildings to its local plant. These include one structure, 70 x 200 feet and another, 70 x 125 feet, both six stories. W. A. Bryan is superintendent. The Akron foundry of the Harvester company, which has been idle for some time, was placed in operation Sept. 2.

BARBERTON.—The Diamond Match Co. will erect a brass foundry and considerable new equipment will be purchased. Plans for the new shop are now being prepared.

CANAL FULTON. — The Fulton Machine & Forging Co. was recently sold at private sale.

CINCINNATI.—The commissioners of this county are arranging with the commissioners of Dearborn county, Ind., for the construction of a bridge over the Whitewater river at Harrison.

CINCINNATI.—The county commissioners of Hamilton county on Sept. 4 rejected the

bid of C. H. Glandorf for construction of substructure of the Cleves, O., bridge over the Great Miami river, and awarded contract to the Cleary-White Construction Co., of Chicago, on the latter's bid of $70,975.

CINCINNATI.—The Modern Machine Tool Co., Winton place, Cincinnati, which recently increased its capital stock from $70,000 to $115,000, mention of which was previously made in these columns, will probably purchase some new equipment soon. The company manufactures a heavy turret lathe.

CINCINNATI.—The Chamber of Commerce, Cincinnati, has received an inquiry from Henry Weiss, an American engineer in Budapest, Hungary, for a large number of jacks, concrete machines and accessories. He is engaged in building bridges and general engineering work in that country.

CLEVELAND.—The Clay Engine Co. has been incorporated; $30,000; by H. F. Schmidt and C. F. Schmidt.

CLEVELAND.—The DeMoey Brothers Co. has been incorporated to manufacture machingeneral machine work; $10,000; by J. A. Chamberlin, P. Crum, L. A. Kraus, R. L. McCarty and M. T. Gorton

DELAWARE.—W. H. Bodurtha, county auditor, will open bids Sept. 13 for removing, rebuilding and re-erecting the Winter street bridge, now in the Olentangy river.

IRONTON.—The city council has approved an appropriation of $175,000 for the purpose of reconstructing the water system, involving the erection of an intake tower, pumping station and filter plant. Hering & Gregory, engineers.

LIMA.—C. R. Phillips, clerk board of county commissioners, will receive bids Sept. 30 for the superstructure of a bridge over the Ottawa river in Shawnee township. Plans and specifications on file with county surveyor.

LISBON.—The board of county commissioners will open bids Sept. 15 for the construction of bridge No. 826, in Center township, according to plans by B. M. French, county commissioner.

LOUDONVILLE.—Ashland county commissioners have awarded contract for concrete bridge at Main street to S. F. Scott of Ashland, and a steel span bridge to Mt. Vernon Bridge Co.

MANSFIELD.—The Standard Chain Co.'s plant, which was recently damaged by fire, is to be rebuilt.

OBERLIN.—The New York Distributing Co., W. J. Mosher, of New York City, president and J. N. Stone of this city secretary, capitalized at $400,000, has made application at Columbus for a charter. The company expects to break ground this month for a plant, plans for which include the installation of $40,000 worth of machinery.

PORTSMOUTH.—County commissioners have sold bonds amourting to $440,000 for replacement, reconstruction and repair of a number of bridges in various parts of the county.

SPRINGFIELD.—The construction of a viaduct over the Pennsylvania road at North Main street is being contemplated.

TOLEDO.—The Universal Machine Co. has increased its capital stock from $100,000 to $125,000.

OREGON

ACME.—Wendling & Johnson plan a sawmill here with a capacity of 300,000 feet per day.

BAKER.—Bids will soon be asked for the proposed municipal lighting plant at this place to cost about $25,000. Bonds have been voted.

MEDFORD.—The Three Lodes Mining Co. is making ready to clear ground for installation of crushing, pulverizers, concentrators, etc., in Galice mining district. Small sawmill and power plant will also be installed.

PORTLAND.—The plans for proposed public dock No. 2 have been altered and same is to be fireproof instead of mill construction, costing $317,000.

PORTLAND.—Contract for construction of 12 bridges over Mutual river on the line of the extension of the Oregon, Washington Railroad & Navigation railway from Vale to Odell has been let to the Oregon Bridge & Construction Co., Bates building, at $156,000.

WARRENTOWN.—Water commissioners have been selected to develop a water system to cost about $250,000.

PENNSYLVANIA

ALTOONA.—The Standard Refractories Co., capital $150,000, has been organized and will be chartered to install a silica brick plant on a 25-acre plot near Claysburg, Blair county, according to an announcement. Thomas N. Kurtz, Mt. Union, Pa., is head of the new company.

BRACKENRIDGE.—The Allegheny Steel Co. will install improved ash-handling equipment, contract for which has been placed with the Green Engineering Co., Oliver building, Pittsburgh.

ERIE.—Incorporation is to be asked by the Crawford-Cummings Co. to manufacture engines and machinery. The incorporators will be Joseph Crawford Jr., Edgar C. Cummings, John M. Crawford and David B. Crawford.

ERIE.—Work has been started by the Bury Compressor Co. on a 90 x 150 foot shop addition to its finishing plant at Raspberry and Seventeenth streets, at estimated cost of $4,000.

ERIE.—Charter will be asked Sept. 27 by the Erie Iron & Steel Co., a corporation organized by I. H. Benjamin and M. V. Emmerman for buying and selling iron and steel scrap. They have been in a similar business as individuals.

JOHNSTOWN.—The Standard Automobile & Machinery Co., capitalized at $50,000, has been incorporated by C. W. Leitenberger, J. W. Leitenberger and B. F. Miller, Johnstown.

OIL CITY.—The Reid Gas Engine Co. is enlarging its plant by the addition of a building, 75 x 122 feet, to be used as a casting cleaning and storage room. An extension has also been made to the machine shops.

PHILADELPHIA.—Plans have been completed for the erection of a one and two-story machine shop, 200 x 400 feet, for the Otis Elevator Co., Harrison, N. J. It will be brick and stone.

PITTSBURGH.—The machine shop of John Pfaller, East End, was destroyed by fire last week.

PITTSBURGH.—The Union Steel Castings Co. is erecting a two-story brick and terra cotta office building.

PITTSBURGH.—The pattern storage building of the Lawrence Steel Casting Co. was damaged by fire recently. Origin of the fire is unknown.

PITTSBURGH.—The Standard Sanitary Mfg. Co. has ordered two 250-horsepower water-tube boilers from the Erie City Iron Works, to be operated by Green chain grate stokers.

PITTSBURGH.—The Caldwell Mfg. & Supply Co. has been incorporated; iron and steel, brass, etc.; $30,000; by T. C. Van Horne, F. J. Caldwell and J. H. Bialas, all of Pittsburgh.

PITTSBURGH.—The Pittsburgh Electric Tool Co. has been incorporated by Max Harris and M. K. Garrett, Pittsburgh, and H E. Steward, New York, with a capital of $5,000

PITTSBURGH.—The Standard Steel Car Co., according to frequent reports, will manufacture automobiles in a new plant under course of construction at Butler, Pa. Officials of the company have not made any definite announcement.

PITTSBURGH.—The Fort Pitt Bridge Co. has ordered a Thomas spacing table equipped with multiple punch from the Standard Bridge Tool Co., Pittsburgh, for installation in the Canonsburgh, Pa., works. Spacing table will punch two pair of angles up to 8 x 8 inches.

PITTSBURGH.—The John Eichleay Jr., Co. has received a contract from the Cambria Mining Co. for the erection of a steel coal tipple at Bellaire, O. About 250 tons of steel will be involved. The company will install chain haul equipment for handling tipple cars and power plant equipment for electric operation.

PITTSBURGH.—The Babcock & Wilcox Co. has received a contract for two 665-horsepower water-tube boilers for installation in the power house of the Oliver central power building, being increased in capacity to serve the new Kaufmann-Baer store.

PITTSBURGH.—Preliminary plans are being made by Samuel Diescher&Sons,engineers, for the erection of the Standard Seamless Tube Co.'s new plant near Economy, Pa. Ground will be broken within a fortnight. The Fownes interests, the German National Bank building, have filed a deed with the recorder of Beaver county for a site of 55 acres, recently acquired in Harmony township, near the site of the American Bridge Co.'s works at Ambridge, and application for a charter has been made. The Reliance Coke Co., controlled by the Fownes interests, has practically completed the erection of its coal and coke plant near Denbo, Pa., where the company has 600 acres of coking coal land. The coke plant consists of 250 rectangular ovens. Work on the mine shaft has been completed.

PITTSBURGH.—Bids for the piping and appurtenances for the Aspinwall pumping station have been opened by the department of public works. Bidders were: Pittsburgh Valve, Foundry & Construction Co.; Best Mfg. Co.; National Valve & Mfg. Co.; W. K. Mitchell & Co.; American Foundry & Construction Co., and the Pittsburgh Piping & Equipment Co.

SCRANTON.—Plans are being prepared by the Electric Steel Products Co., Scranton, for a large manufacturing plant to be erected here.

SHARON.—An addition to the power house of the Sharon Steel Hoop Co. is under construction. Equipment to be housed therein will add about 30 per cent to the electrical facilities. One new unit is to be erected at once and space is provided for a second to be installed later.

SHARPSVILLE.—The Valley Iron & Mould Co., in line with its policy of keeping its capacity in advance of its present business, has completed plans whereby its daily capacity will be increased by 100 molds, or about 350 tons. When the extension is completed daily capacity will be approximately 1,200 tons of molds and stools. Contracts for extensions will be let at once.

TOPTON.—Repairs on the Empire Steel & Iron Co. plant are progressing, and it is expected operations will begin in the course of a few months.

WYMAN.—The Aiken Electric & Mfg. Co. has been incorporated; gas engines, etc.; $6,000; by T. A. Wayman, G. A. Aiken, both of Pittsburgh, and G. E. Wayman, of Sewickley, Pa.

TENNESSEE

COLUMBIA.—The municipality is preparing to issue bonds for $100,000 for purchasing and improving water plant, now privately owned and operated.

MARYVILLE.—The city is planning the establishment of a water system, either by letting a franchise to a private company or issuing bonds and doing the work itself.

TEXAS

FORT WORTH.—The Gamer Crescent Co. has been incorporated to manufacture machinery; $50,000; by C. Gamer, R. Vickery and W. W. Manning.

TEAGUE.—The Trinity & Brazos Valley railroad shops at this place were badly damaged by fire Aug. 26, at an estimated loss of $500,000. Twenty acres of buildings were burned.

VIRGINIA

ROANOKE.—The Roanoke Refined Iron Co., Inc., has been incorporated to manufacture and deal in iron, steel and other like metals; $500,000; by D. C. Thomas, W. G. Hughes, L. S. H. Gable and R. Robinson, all of Pittsburgh, and C. R. Wertz, Roanoke.

WASHINGTON

KENTON.—Contract for the first $250,000 unit of the Pacific Coast Coal Co.'s briquetting plant here has been awarded to the Lake Belton Co., of Chicago. Manager James Anderson of the plant, announces that another unit of the same size will be constructed within a year.

LEAVENWORTH.—Washington Steel & Iron Co., this place, plans to add three more units to its plant.

PROSSER.—Bids will be received by L. L. Lynn, county auditor this place, up to Sept. 18 for constructing a 235-foot steel span, two concrete abutments and 189 feet of pile trestle across the Yakima river.

ROSALIA.—The Milwaukee railroad will build a concrete and steel bridge to replace a trestle near this point.

SEATTLE.—Minerals Reduction Machinery Co. has been incorporated here for $100,000 by W. J. Bracking et al.

SPOKANE.—The Inland Empire Paper Co. will install three 1,000-kilowatt Allis-Chalmers transformers.

SPOKANE.—The Spokane Valley Power

Co. has been incorporated for $200,000 by J. W. McBride et al.

SPOKANE.—The Treasure State Mining Co., of Spokane, has been incorporated for $1,000,000 by Alfred G. Carr and Wm. F. Carr.

SPOKANE.—The Sanitary Fountain Co. has purchased a site here with a view of erecting building estimated to cost $250,000. Plans are submitted in competition.

SPOKANE.—Contract for the construction of concrete abutments for steel bridges over Box canyon, Wilson canyon and Bovey canyon on the Snake river for the Spokane, Portland & Seattle Railway Co., has been let to Campbell & Hartman, of Portland.

STEVENSON.—E. P. Ash and Sam Samson will install a 750-kilowatt unit direct connected to a Pelton water wheel on the Wind river, power to be used for logging purposes.

TACOMA.—The T. & B. Brass Foundry Co., at E. Twenty-third and C streets, recently installed two oil furnaces and will install a third in the near future.

TACOMA.—It is announced that the Tacoma Railway & Power Co. plans the erection of a power house, storage sheds and offices.

WISCONSIN

BELOIT.—Work was started Sept. 1 on several new buildings for the Beloit works of Charles H. Besly & Co., grinding and polishing machines. The additions will more than double the size of the Beloit shops and give the company 85,000 square feet of floor space. The main addition will be reinforced concrete structure, 70 x 253 feet, three stories, on foundation designed to carry two additional stories.

EAU CLAIRE.—The Darwin Motor Car Co. has been incorporated to manufacture motor cars, etc.; $10,000; by O. S. Darwin, M. D. Garrison and W. C. Tufts, all of Eau Claire.

FOND DU LAC.—The Fond du Lac Business Men's association is now working on a plan to provide the city of Fond du Lac with a malleable iron foundry, the need of which has been shown by a canvass of Fond du Lac manufacturers who use malleable castings.

GREEN BAY.—The Globe Pump Co., manufacturing double and triple acting pumps for wells and mine purposes for several months, intends to erect a large plant late this fall or early in 1914. The company now occupies part of the Hess Iron Works plant, but is so rushed with orders that it needs larger facilities. The Chicago & Northwestern Railroad Co., an extensive user of the Globe pumps, intends to equip its entire system.

JANESVILLE.—The R. S. Perfection Plating Co. has been organized by T. W. Richards and J. Snyder and established a shop at 117 Dodge street to serve Janesville manufacturers and do a general plating business.

KENOSHA.—The Thomas B. Jeffery Co., automobile manufacturer, has increased its power facilities to 3,925 net horsepower by the installation of a 2,200-horsepower cross-compound engine, built by the Allis-Chalmers Mfg. Co., Milwaukee.

MANITOWOC. — The Manitowoc Boiler Wks. is devoting considerable attention to the manufacture and installation of digestors for wood pulp mills throughout the United States.

MANITOWOC.—The Aluminum Castings Co., of Cleveland, has reopened its large casting shop in this city, and nearly 100 men are employed in the production of crankcases, chiefly on the large contract with the Mitchell-Lewis Motor Co., Racine.

MENASHA.—The city awarded a contract to the Busch-Sulzer Diesel Engine Co. of St. Louis, for a 100-horsepower oil engine for the water, light and power plant.

MILWAUKEE.—The Wehr Steel Co. has completed the installation of an extensive system of fire protection at its foundry in West Allis.

MILWAUKEE.—The American Bridge Co. has booked a contract for erecting a new boiler house for Allis-Chalmers Mfg. Co., West Allis.

MILWAUKEE.—The Chicago, Milwaukee & St. Paul started work Sept. 1 on the gigantic South Side track elevation scheme, which involves an expenditure of $5,000,000. All tracks between the Union depot at Second and Fowler streets to Kinnickinnic avenue, will be elevated.

NEW LONDON. — The board of public works is about to close bids for pipe and fittings, pump and dynamo, sinking seven artesian wells, and constructing a 200,000-gallon reservoir, for the municipal water-works system. The dynamo will be of 50 horsepower.

OOSTBURG.—All the patents, equipment, buildings and real estate owned by the defunct Yale Mfg. Co., manufacturing automobile accessories and parts, have been purchased for about $18,000 by F. A. Tuschen of Watertown, and A. G. Scheuerell, of Sun Prairie, who will prepare to resume operations in the plant at once.

VESPER.—The malleable iron foundry of the defunct Vesper Malleable Iron Co. has been taken over by a new concern, the United States Malleable Iron Co., which on Sept. 1 resumed operations with a force of 45 molders. The general operations are in charge of J. L. Hooper, of Cleveland. The

WATERTOWN.—Stimulus has been given to the movement at Watertown to establish a malleable iron plant by the efforts of numerous other Wisconsin cities to secure similar foundries for themselves.

WEST BEND.—The West Bend Aluminum Co., established about 18 months ago, has increased its force to 60 people and is purchasing some new equipment for pressing and polishing. Electric drive is used throughout. The company is planning to erect a modern brick building next year.

DOMINION OF CANADA

ALBERTA

CALGARY.—No less than 46 line elevators will be built in the Province of Alberta.

CALGARY.—The General Supplies Co. has been awarded contract by city for supplying valves and steampipes at a cost of $26,000.

CALGARY.—A. W. Ellson Fawkes, water works engineer here, has drafted plan for gravity pipe line 40 miles long to bring water here from the Rocky mountains. The estimated cost is in excess of $1,000,000.

REDCLIFF.—The Redcliff Rolling Mills & Bolt Works was formally opened Aug. 27.

MEDICINE HAT.—A large plant will be put up in Medicine Hat by the Western Threshing Machine Co., capitalized at $100,000. They will manufacture an improved threshing machine.

BRITISH COLUMBIA

PORT MANN.—Work has been started by the Northern Construction Co. on the Canadian Northern railway's terminals here. A turntable with 80-foot clearance, a roundhouse with accommodations for 15 locomotives and admitting of extension, and repair shops 140 x 312 feet will be built.

VANCOUVER.—It is reported that the contract for the government dock at this place has been let to the firm of Henry, McFee & McDonald at $1,250,000.

VERNON.—An estimate of the cost of standardizing the roads of the Okanagan Valley by Hamilton Long, road superintendent, places the amount at $1,026,000. The expenditure of this amount will be imperative in the near future.

MANITOBA

WINNIPEG. — The Dunmore Tractor & Implement Co., Ltd., has been incorporated; $200,000; by Henry Prince, W. J. Donovan, A. M. Doyle and others.

WINNIPEG.—J. G. White & Co. of New York, have been awarded a contract for a new plant to cost $5,000,000, for the Winnipeg Electric Railway Co. on the Winnipeg river at Grand Bonnet Falls.

WINNIPEG. — Tenders will be received until Sept. 20 for labor and materials for erection of duplicate transmission system. Plans and specifications may be obtained from M. Peterson, secretary of the board of control.

WINNIPEG.—Bids will be received by M. Peterson, secretary of the board of control, until Sept. 19 for the supply of a quantity of cast iron pipe and 150 6-inch hydrants for the Domestic Service Water Works. Specifications from the city engineer, 223 James avenue.

NEW BRUNSWICK

McADAM JUNCTION.—The Canadian Pacific will shortly let contracts for car shops at an estimated cost of $100,000.

ONTARIO

BERLIN.—Negotiations for establishing a Canadian branch of the Buffalo Forge Co. have been completed, the city having given the company a site of five acres.

COBALT.—The Rea mine directors have decided upon the immediate addition of five stamps to its small five stamp battery in the mill.

COBALT.—The Northern Customs Concentrator has placed an order for 80 stamps with the Power & Mining Machinery Co., for delivery in 60 days.

FORD CITY.—The Ford Motor Co. of Canada, Ltd., will shortly purchase a gas engine with a capacity of 5,000 horsepower, which will be a duplicate of that installed in the parent plant at Detroit some time ago.

GUELPH.—The Guelph Brass Foundry Co. has been organized by E. L. Tolmie, A. Thompson, H. Haislip and others, to take over the plant formerly occupied by the Dominion Axle Works Co., and manufacture brass castings.

HAMILTON.—G. U. Guest, of Montreal, has been awarded contract for constructing the conduit system for electrical wires at $177,822.

KINGSVILLE. — The Ecothermal Stove Co. of Canada, Ltd., has been incorporated to manufacture and deal in stoves, ranges, furnaces, heating and cooking appliances, metallic ware, castings and other metallic products; $100,000; Bon Jasperson, George Jasperson and Curtis J. Green, manufacturers and others of Kingsville.

LONDON.—The Ideal Electric Mfg. Co., Ltd., has been incorporated to manufacture electrical heating and cooking apparatus; $40,000; by John Sussex, Robt. J. Gracey, and Walter A. Cooper, of London.

ORILLIA.—The plant and machinery of the Tudhope Motor Co., Ltd., has been sold to the Fisher Motor Co., of Walkerville, Ont., who will take possession at once, and operate the factory during the fall and winter until the stock on hand is used up. The plant has been closed down for several months.

OTTAWA.—A plant for the manufacture of mining tools and equipment is planned in Ottawa by M. J. O'Brien, of Renfrew. Plans are now in progress.

OTTAWA.—The contract for section 3 of the Welland ship canal, has been let to O'Brien & Doheny, of Montreal, at $9,540,050. The work includes much rock excavation and the construction of three locks.

OTTAWA.—A new ice-breaking steamer is to be built by the Canadian government, plans having already been prepared. The boat will be built of steel, 275 feet long, 57½ feet wide and 32 feet deep.

OTTAWA.—The Castings of Ottawa Co., Ltd., has been incorporated to manufacture iron and steel articles; $40,000; by James Oliver, Alexander Campbell, William A. L. Oliver, and Harry M. Lee, all manufacturers of Ottawa.

OTTAWA.—Two large steel dredges, equal in capacity to the best in Canada, have been turned out at the Victoria Island ship yard of the public works department here. They will be used for dredging at St. John, N. B., and Canso, N. S.

OTTAWA.—Contract for the Toronto harbor improvements involving millions of dollars, has been awarded to the British firm of Baldrey, Yerburgh & Hutchinson, of 21 Ansgate, London, Eng., who recently opened an office at St. Catharines, Ont., which, in view of the contract just secured, will be moved to Toronto. Their tender was the lowest of five.

POINT EDWARD. — The Grand Trunk railway is contemplating the construction of an elevator at Point Edward, Ont. It will be of concrete and steel.

SAULT STE. MARIE.—The Standard Oil Co. has awarded a contract for the erection of a dock and warehouses to John Boyd, of Sault Ste. Marie, at $75,000. Work will commence at once. Among the new equipment to be bought will be several powerful pumps.

SAULT STE. MARIE.—During a storm here on Aug. 26, the switchboard of the Algoma Steel Corporation plant was struck, and part of the power plant destroyed. The fire brigade prevented the demolition of the steel plant. About 4,000 men were put out of employment, the coke ovens and one blast furnace being crippled.

TORONTO.—The Cluff Mfg. Co. has been

Penton's Book News

Publishers and Book Handlers

CLEVELAND

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REMEMBER

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PENTON'S BOOK NEWS

CLEVELAND

incorporated to manufacture plumbers' and steamfitters' supplies; $300,000; Arthur W. Holmsted, Chas. J. F. Collier, and D. J. MacLean.

TORONTO. — Ritchie & Allen, Ltd., has been incorporated; $40,000; to carry on a hardware, tinsmithing and plumbing business. Robert D. Minehead, Leopold Macaulay and John E. Anderson are provisional directors.

TORONTO. — Hepburn & Disher, Ltd., have been incorporated to manufacture structural and other classes of iron and steel; $150,000; by John T. Hepburn, Clark E. Disher, et al.

TORONTO.—The Tube & Pipe Bending Co. of Ontario, Ltd., has been incorporated with an authorized capital of $100,000, to manufacture all kinds of metals and carry on the business of a foundry and machine shop. The provisional directors are James F. Edgar, James E. Mabee, N. R. Tyndall and others.

TORONTO. — Moffat-Irving Steel Works, Ltd., has been incorporated here for the manufacture of steel and iron products; $100 000; by Thomas C. Irving Jr., Thomas R. Loudon, civil engineers, and James W. Moffat, mining engineer, Toronto. The firm already has a plant in Toronto where it manufactures steel castings by an electrical process.

TORONTO. — The Canadian Pacific railway has just completed plans for additional buildings at King and Simcoe streets in connection with freight terminals. These include a solid brick and steel warehouse, 75 x 500 feet, to be used by the freight department and the Dominion Express Co. to cost $500,000; freight houses for inbound and outbound freight, each 50 x 900 feet, covered transfer platform 50 x 900 feet; offices connecting both freight houses 40 x 185 feet. All buildings will be of brick and steel; the total cost to be about $1,200,000.

TRENTON.—The contracts for the erection of a new station, a freight shed, an enclosed tank of 40,000 gallons capacity, tool house, turntable, twelve-stall locomotive house, machine and boiler house and coaling plant have been awarded to the John Metcalf Co., of Montreal, by the Canadian Pacific railway.

WELLAND.—Tenders have been called for for seven buildings for the Union Carbide Co.'s plant at an estimated cost of $1,200,000.

WINDSOR.—The Burroughs Adding Machine Co., of Detroit, has decided to establish a branch plant and sales office in Windsor. W. J. Healey, formerly of Toronto, has been appointed branch manager. At first the plant will be used only for assembling.

QUEBEC

LEVIS.—The machinery required in the construction of the government drydock at Levis, on which the contractors, M. P. and J. F. Davis, are now working, will cost over $2,500,000 and will include drilling apparatus, steam shovels, etc. Excavations will have to be made in solid rock.

MONTREAL.—Machinery will be required for a new lumber mill which is being built at a cost of $25,000 for F. Tremblay & Co. of Montreal, 400 William street.

MONTREAL.—The Imperial Wire & Cable Co. is having constructed by E. G. M. Cape, a new plant to cost $1,800,000. The machinery will all be run by electric power.

MONTREAL.—A grain elevator of 3,000,000 bushels capacity will be built by the harbor commission in Montreal. It will be for the purposes of the export trade.

MONTREAL.—L. E. Moulton & Co., Ltd., have been incorporated as manufacturers of pipe and appliances; $50,000; by Lyman E. Moulton, Joseph A. Cousineau, and Hugh M. Wamboldt.

MONTREAL.—The Canadian Pacific Railway announces large extensions will be made to Angus shops here, including two material shops, passenger car shops, freight car shops, bolt and nut shop and an addition to the locomotive shop.

MONTREAL.—The Southern Canada Power Co., Ltd., has been incorporated to carry on a light, heat and power business in all its branches; $3,000,000; by Charles H. Cahan, Orick B. McCallum and Mostyn Lewis.

MONTREAL.—The Imperial Wire & Cable Co. will build a factory in Montreal to cost $1,100,000. The building will be eight stories at its highest part and will be constructed by E. G. M. Cape and the Dominion Bridge Co.

MONTREAL. — E. G. M. Cape, New Birks building, Montreal, is the general contractor for the $1,000,000 steel works to be built at Longeuil for the Armstrong Whitworth Co. The mill work will be done by Pringle & Co., Ltd., of Belleville, Ont., and the roofing and sheet metal by the Metal Shingle & Siding Co., 91½ Delorimier avenue.

QUEBEC. — The Agricultural Implements Mfg. Co., Ltd., has been incorporated to manufacture and deal in all kinds of carriages, agricultural implements and machinery, tools, etc.; $75,000; by Frederic C. Dufour, Aliace-Marcoux Bilodeau and Ludger Turcotte.

TRADE NOTES

BIRMINGHAM, ALA.—The Standard Steel Co. is making preparations to close its open-hearth furnaces, blooming mill and rod mill for about 15 days for repairs. The wire and nail mill will not be closed.

CLEVELAND. — The Federal Steel Sales Co., Leader-News building, has been appointed sales representative for the Fred Medart Mfg. Co., St. Louis, manufacturer of steel lockers and metal shelving.

DETROIT.—The total sales of the Packard Motor Car Co. for the year ended July 1, 1913, aggregated $16,928,515, an increase of $3,073,601 over the previous year. Vehicles sold numbered 4,447 as compared with 3,460 for the same period of 1911-12.

INDIANAPOLIS.—It is regarded as likely that a satisfactory settlement, in which the interests of the creditors will be fully protected, will be made in the receivership proceedings of the Muncie Gear Works, at Muncie. The company was recently placed in the hands of a receiver on application made by E. C. Atkins & Co., of Indianapolis. The plan of settlement, which has been agreed to by most of the creditors, is that the company shall issue $275,000 of five per cent preferred stock which is to be used in taking up the claims. The company has orders for about $400,000 on its books.

LOUISVILLE, KY.—The United States Cast Iron Pipe & Foundry Co. is reported to be considering closing down permanently its Louisville, Ky., plant. D. Long, resident manager, has been in charge since the resignation of his father, George J. Long, his grandfather, Dennis Long, having founded the pipe foundry which was taken over when the United States company was formed. The Louisville Board of Trade has asked the company not to remove or dismantle the plant.

MILWAUKEE.—The new Wisconsin workmen's compensation act went into effect on Sept. 1, and less than 1,250 employers in Wisconsin who employ four or more persons in a common employment, are subject to the provisions of the act. The original industrial insurance law was passed by the legislature of 1911, and after two years of trial, important changes were made in the act by the legislature of 1913.

NEW YORK CITY.—The Metal Treating & Equipment Co., Inc., United States Rubber building, has opened a plant at 834 Humboldt street, Brooklyn, which will be devoted to job galvanizing work.

PEORIA, ILL.—The Culter & Proctor Stove Co. recently celebrated the 50th anniversary of its establishment by giving a reception to its numerous dealers, more than 200 of whom attended. This firm was established by the late Richard Cutler and D. C. Proctor, and was recently reorganized with R. D. Clarke, president; Proctor P. Cooley, vice president; Garrett D. Kinney, secretary and treasurer.

PITTSBURGH.—The Lytton Mfg. Co., New York City, maker of separating, return and vacuum traps and reducing valves, is now represented in Pittsburgh by the John F. Robertson Co., Park building.

PITTSBURGH.—The first systematic survey of the Pittsburgh industrial district will be inaugurated within a few weeks by John P. Jackson, state commissioner of labor and industry. The inspection will be in line with the effort for "industrial betterment", and will be similar to those conducted at Philadelphia, Scranton and Harrisburg.

SHARON, PA. — Following a movement started by employes of the H. C. Frick Coke Co., several weeks ago, employes of the United States Steel Corporation in the Sharon and Newcastle mills are circulating petitions protesting against the proposed dissolution of the organization. Petitions will be forwarded the congressman representing the district, to be filed with congress.